

Project Manual

PROJECT NO.

081058-00

PROJECT TITLE:

Upgrade Elevators
Campus Wide

DATE:

10/03/2022

State University College at New Paltz



MDSzerbaty & Associates Architecture, LLC
307 Seventh Avenue, Suite 1501
New York, NY 10001
Tel: 212.352.3307

State University Construction Fund
H. Carl McCall SUNY Building
353 Broadway
Albany, New York 12246



IAQ Systems Inc, Consulting Engineers
555 Eighth Avenue, Suite 1502
New York, NY 10018-4634
Tel: 212.680.8945



VDA
145 West 30th Street, 4th Floor
New York, NY 10001
Tel: 212.868.9090

Adelaide Environmental Health Associates, Inc.
1511 Route 22 Suite C24
Brewster, New York 10509
Tel: 845.278.7710

October 2020

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(08/08/2022)

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STATE UNIVERSITY CONSTRUCTION FUND**NOTICE TO BIDDERS****(Newspaper Ad)**

The State University Construction Fund will receive sealed Proposals for Project No. 081058-00 Titled Upgrade Elevators Campus Wide at SUNY New Paltz until 2:00 p.m. Local Time on 11/09/2022 at the Fund's Office at H. Carl McCall SUNY Building, 353 Broadway, Albany NY 12246, where such proposals will be publicly opened and read aloud.

The Contractor shall complete all work necessary for substantial completion within 690 calendar days from receipt of the Notice to Proceed.

The Fund's project specific goals for this project are 10% MBE and 10% WBE and 3% SDV.

A pre-bid conference and project walk through will be held on 10/26/2022 with all contractors assembled at 10:00 a.m. in the Student Union Building Atrium.

Bidding and Contract Documents may be examined free of charge at the campus and at:

Consultant's Office 307 Seventh Ave., Suite 1501, New York, NY 10001
212-352-3307 attn: Tomoko Sawamura

Plan Rooms

CMD (formerly Reed) *(subscribers only):*

Visit www.cmdgroup.com

Dodge Reports

Visit www.construction.com

Construction Journal

Visit <https://www.constructionjournal.com/>

Complete sets of Contract Documents for bidding may be obtained from the Consultant upon receipt of a payment of \$49.00 for a printed copy or \$10 for an electronic copy, made payable to the Consultant, for each complete set. The Fund waives fees and deposits for sets of the Contract Documents requested by NYS certified Minority- and Women-Owned Business Enterprise or Service-Disabled Veteran-Owned Business Enterprise.

Bids must be submitted in duplicate in accordance with the instructions contained in the Information for Bidders. Security will be required for each bid in an amount not less than five (5) percent of the Total Bid. Each bid must be identified, on the outside of the envelope, with the name and address of the bidder and designated a bid for the Project titled above. When a sealed bid is placed inside another delivery jacket, the bid delivery jacket must be clearly marked on the outside "BID ENCLOSED". Visit <http://www.sucf.suny.edu/business/bidcal.cfm> and download the "Bid and Post Bid Checklist" that gives bidders a one-page summary of how to be prepared if bidding.

It is the policy of the State of New York and the Fund to encourage minority/women's business enterprise participation in this project by contractors, subcontractors and suppliers, and all bidders are expected to cooperate in implementing this policy.

The Fund reserves the right to reject any or all bids.

STATE UNIVERSITY CONSTRUCTION FUND

**STATE UNIVERSITY CONSTRUCTION FUND
NOTICE TO BIDDERS**

The State University Construction Fund will receive sealed Proposals for Project No. 081058-00 Titled Upgrade Elevators Campus Wide at SUNY New Paltz until 2:00 p.m. Local Time on 11/09/2022 at the Fund's Office at the H. Carl McCall SUNY Building, 353 Broadway, Albany, NY.

NY 12246, where such proposals will be publicly opened and read aloud in Room S201. Bidders are encouraged to view the live stream of the bid opening broadcast on the day of the bid by using the link posted on the Fund's web page: <https://sucf.suny.edu/> Bidders are encouraged to submit their bids early by delivery service and use the bid modification process permitted in part (7) of Section 3 of the Information for Bidders.

All proposals and/or proposal modifications must be received and stamped in no later than 2:00 p.m. on the bid opening date. The Proposal may be hand delivered to Room S204A or be mailed or sent by delivery service to the State University Construction Fund, H. Carl McCall SUNY Building, 353 Broadway, Albany, New York 12246. Each bid must be identified, on the outside of the envelope, with the name and address of the bidder and designated a bid for the Project titled above. When a sealed bid is placed inside another delivery jacket, the bid delivery jacket must be clearly marked on the outside "BID ENCLOSED". Proposals that are mailed to the Fund must be delivered by 1:00 p.m. on the day of the scheduled bid opening and mailed Proposals must be sent using a delivery method that provides tracking and locating the Proposal. The Fund assumes no responsibility for any Proposal that is not delivered to the aforesaid address by 1:00 p.m. on the bid opening date. See Section 3 of the Information for Bidders for additional instructions regarding proposals, including modifications. Please be advised that all individuals who access the H. Carl McCall SUNY Building to submit bids or attend bid openings will be required to present picture identification to building security officials and obtain a visitor's pass prior to entering the building. Bidder's arriving prior to 12:30 PM on the bid opening date may be asked to wait outside. There is no parking available for bidders at the H. Carl McCall SUNY Building and violators may be towed.

To assure delivery of their bid prior to the aforesaid deadline for receipt of bids, bidders should allow sufficient time for individuals to find public parking for their vehicles, to find the Visitor Entrance to the building, to be processed through building's health and security screening, to find the Fund's office within the building, to properly complete and submit their proposal, and to allow for delays that are typical for congested urban areas and crowded public bid openings. Bidders should provide the names of individual(s) who will deliver their bid to the Consultant (see contact information below) at least 48 hours prior to the bid date. Due to space limitations, the Fund reserves the right to control physical access into Room S201 and direct the individuals to other spaces in the building where they can view the live stream broadcast of the bid opening on their personal electronic device.

To assure delivery of their bid modification, if any, prior to the aforesaid deadline for receipt of bids, bidders should allow sufficient time to account for internet connectivity problems, to correct email address errors, to be processed through spam filters and security software and to allow or delays that are typical for congested internet servers. You may at any time send an email to the email address in part (7) of Section 3 of the Information for Bidders alerting the Fund of your intent to modify.

All work will be completed within 690 calendar days from receipt of the Notice to Proceed.

The Fund's project specific goals for this project are 10% MBE and 10% WBE and 3% SDV. See Sections 00 21 13 20 Information for Bidders, 00 21 13 30 MWBE Utilization Plan and Instructions and 00 21 13 30 SDVOB Form and Instructions for more information.

A pre bid conference and project walk through will be held on 10/26/2022 with all contractors assembled at 10 a.m. in the Student Union Building Atrium For additional information, see Section 15 of the Information for Bidders.

There is no free parking on campus for those attending the walk through. Violators may be ticketed and towed.

Bidding and Contract Documents may be examined free of charge at:

Consultant's Office 307 Seventh Ave., Suite 1501, New York, NY 10001
212-352-3307 attn: Tomoko Sawamura

Campus at which the work is to be performed SUNY New Paltz, Coykendall Science Building, Smiley Arts Building, Lecture Center, Sojourner Truth Library, Haggerty Administration Building, & Student Union Building.

CMD (formerly Reed) (*subscribers only*):

Visit www.cmdgroup.com.

Dodge Reports

Visit www.dodgeprojects.construction.com

Construction Journal

Visit <https://www.constructionjournal.com/>

Plans will be available on 09/22/2022 from Bluedge, 575 Eighth Avenue New York, NY 10018, 212-366-7250, csr.ny@bluedge.com in either electronic or paper format. Bidders will be able to access the project online at the Printer's web site:

<https://dfs.nrinet.us/bluedge>

To register as a plan holder and purchase bid documents follow the link provided. The home screen under Project Search contains the Bluedge contact inform to purchase the documents and register as a plan holder. To view thumbnails select "View project details" under the content tab you will be able to select folders to view plans or specifications.

Bidders who register as a planholder through the Printer may acquire the bidding and contract documents using the following options:

1. For a fee of ten dollars (\$10), interested firms may request and receive an electronic download of the bidding and contract documents. At the bidder's expense, purchase a printed copy or copies of the bid set.
2. For a fee of ten dollars (\$10), interested firms may request and receive a CD with electronic copies of the bidding and contract documents. At the bidder's expense, purchase a printed copy or copies of the bid set.
3. For a fee of \$49, interested firms may request and receive a printed copy of the complete set. An electronic download or copy on CD will not be provided.

The Fund waives fees and deposits for sets of the Contract Documents requested by NYS certified Minority- and Women-Owned Business Enterprise or Service-Disabled Veteran-Owned Business Enterprise. Payments of less than \$50.00 are non-refundable. Deposits of \$50.00 or more will be returned to all entities who have paid the aforesaid deposit for the entire set of Bidding and Contract Documents and who return such sets to the Consultant in good condition within forty-five (45) calendar days after the opening of bids, not exceeding five (5), so returned to the Consultant.

Bids must be submitted in duplicate in accordance with the instructions contained in the Information for Bidders. A Bid Security will be required for each bid in an amount not less than five (5) percent of the Total Bid. To provide for an efficient bid opening, do not include documents other than your Proposals and securities in your bid envelope. It is the policy of the State of New York and the Fund to encourage minority and women-owned business enterprise participation in this project by contractors, subcontractors and suppliers. All bidders are expected to cooperate in implementing this policy.

Please be advised that the Fund's insurance requirements are contained in the bidding documents. Paragraph (1)a of Section 5.06 of Article V of the Agreement requires that all insurance must be provided by companies approved by the Fund, licensed to do business in the State of New York ("admitted" carriers), and rated at least "A-" by A.M. Best Company. Excess line insurers are not acceptable. See <https://sucf.suny.edu/sites/default/files/docs/GuidanceToSubmitInsuranceCertificates.pdf> All successful bidders will be required to furnish a Performance Bond and a Labor and Material Bond pursuant to State Finance Law for 100% of the amount of the Contract.

Please visit <http://www.sucf.suny.edu/business/bidcal.cfm> and download the "Bid and Post Bid Checklist" that gives bidders a one page summary of how to be prepared if bidding.

Please note that Sections 139-j and 139-k of the State Finance Law imposes certain restrictions on communications between the Fund and bidders during the procurement process. Pursuant to those sections of law, the Fund designates the following email addresses for persons to which communications concerning this procurement may be sent:

SUCF.ConstructionBids@suny.edu to contact one of the following people:
Robbilee Luedtke (518) 320-1837, Samantha Lord, Robert Kanarkiewicz, or Jeremy Clausi.

SUCF.OpportunityAdmin@suny.edu for MWBE SDVOB issues only to contact the following person:
Scott Clay.

SUCF.Insurance@suny.edu for insurance issues only to contact the following person: Jack Amodeo.

Contact with other than the above-designated Fund employees concerning this procurement may result in the rejection of your bid. To purchase plans or for technical inquiries specific to this project, please contact the Architect or Engineer of Record.

Notice on Vendor Responsibility Questionnaires (CCA-2): The CCA-2 has been updated by the Office of the State Comptroller and submission of the updated CCA-2 will be required for any bids received after 9/1/2022; however, the updated CCA-2 may be used prior to this date. It is recommended that bidders and nominated subcontractors review and re-certify their CCA-2 as soon as feasible. See Information for Bidders Section 8, Submission of Post Bid Information, for additional information.

INTEGRITY HOTLINE: As part of its Corporate Integrity Program, the Fund operates an Integrity Hotline 24-hours a day, seven-days a week. If you have knowledge of or suspect fraudulent, unethical, or other misconduct on a Fund project, please call the Hotline toll-free at 866-543-8107 or locally at 518-320-1525. All calls will be received and reviewed only by the Corporate Integrity Officer. Calls can be made anonymously or on a confidential basis. The identity of confidential callers will be fully protected. The Hotline is not equipped with Caller ID and no effort will be made to identify anonymous callers.

The Fund reserves the right to reject any or all bids.

On bid day, bidders must:

- Be aware of the requirements of the **project specific** Section 00 21 13 10 Notice to Bidders.
- Be aware of the requirements of the **project specific** Section 00 21 13 20 *Information for Bidders*.
- Provide two (2) complete original **project specific** Proposals per Sections 3 and 5 of the *Information for Bidders*. **Proposals with major informalities will be rejected.**
 - Attachment A of the Proposal (List of Completed Similar Construction Contracts) must be completed. **Do not submit a blank form** or insert "refer to attached lists".
 - Before completing Attachment A, read the **project specific** requirements of Section 7 Qualification of Bidders and Section 01 11 00 Description of Work (Section A).
- Provide two (2) complete original Bid Bonds per the Instructions for Execution of Bid Bond and Acknowledgment, or other bid security per Section 6 of the *Information for Bidders*.
 - Use the Fund's form of Bid Bond with date Dec 2015 in the lower right-hand corner.
- Deliver the Proposals and bid security **using the special bid envelope** per the *Notice to Bidders*.
- Be in compliance with NYS Dept. of State registration requirements. Nominated subs must also comply. Business entities must be in the DOS database. Search for entities at this website:
 - <https://apps.dos.ny.gov/publicInquiry/>
- Be aware that all insurance must be provided by companies approved by the Fund, licensed to do business in the State of New York (i.e., "admitted" carriers), and rated at least "A-" by A.M. Best Company. Use the link below to the Fund's website for complete guidance_
<https://sucf.suny.edu/sites/default/files/docs/GuidanceToSubmitInsuranceCertificates.pdf>
 - Please consult your insurance agent prior to bidding, who should be aware of Sections 5.06 and 5.07 of the [Agreement](#) and other requirements of Article V.
 - Excess line insurers are not acceptable. Carriers must be listed in the NYS Department of Financial Services database.
 - <https://myportal.dfs.ny.gov/web/guest-applications/ins.-company-search?null=>
- Be aware of project specific physical conditions and subsurface conditions that could reasonably anticipated from the provisions of the Contract Documents, Section 00 31 00 Available Project Information (if applicable), and other information available to bidders and from the bidder's own inspection and examination of the site.

Post bid, bidders must:

1. Within 48 Hours after the time of the Bid Opening:
 - Provide a completed Appendix "A" per Section 8(1)d of the *Information for Bidders*.
 - Provide a Construction Schedule per Section 8(1)b of the *Information for Bidders*.
 - Provide a completed [NYS Vendor Responsibility Questionnaire For-Profit Construction \(CCA-2\)](#) per Section 8(1)a of the *Information for Bidders*.
 - Confirm your CCA-2 shows financial information required by Section 7(2) of the *Information for Bidders*.
 - Confirm your CCA-2 Attachment A shows completed construction contract information required by Section 7(3) of the *Information for Bidders*.
 - Confirm your CCA-2 includes the additional information requested for "Yes" responses, if any.
 - Confirm your CCA-2 Attachments A and B show current information for owners, architects and their current telephone numbers for contracts listed.
 - Provide names of proposed subcontractors and Attachment A's showing their experience per Section 8(1)c.iv of the *Information for Bidders*.

00 21 13 15 CONTRACTOR'S BID AND POST BID CHECKLIST

- Provide detailed descriptions of work for projects listed in Attachment A of your Proposal (List of Completed Similar Construction Projects) if such descriptions did not fit or if requested by the Fund.
 - Cooperate with the Fund's Consultant and provide other information they may reasonably require to evaluate your bid in detail.
2. Within seven days after the time of the Bid Opening:
- Provide CCA-2 for each proposed subcontractor per Section 8(1)c of the *Information for Bidders*.
 - Confirm the CCA-2 includes the additional information requested for "Yes" responses.
 - Confirm the CCA-2 Attachments A and B show construction contract information for owners, architects and their current telephone numbers.
 - Provide an MWBE Utilization Plan per Section 8(3) of the *Information for Bidders*.
 - Provide an EEO Statement and Plan per Section 8(4) of the *Information for Bidders*.
 - Provide proof of workers' compensation, disability benefits insurance coverage, and as requested, names of all insurance carriers.
 - This is the Workers Comp/Disability link for employers: <http://www.wcb.ny.gov/content/main/Employers/Employers.jsp>
 - This is the link with a description of the required forms for Workers Compensation and Disability: <http://www.osc.state.ny.us/agencies/guide/MyWebHelp/Content/XI/18/G.htm>
3. Prior to the Fund sending you a Notice of Award letter:
- Provide additional information per Section 8(5) of the *Information for Bidders, if requested*.
4. After your receipt of the Notice of Award letter, provide the following by the date stipulated in the letter transmitting the Notice of Award:
- Sign and complete the Contractor's portion of the **Project Specific** Agreement sent to you by the Fund.
 - Provide required bonds per Section 10 of the *Information for Bidders*.
 - Provide the 120-day Construction Schedule required by the General Requirements, Special Conditions paragraph titled "Project Schedule."
 - Provide the completed insurance forms per Sections 5.06 and 5.07 of the Agreement. See <https://sucf.suny.edu/sites/default/files/docs/GuidanceToSubmitInsuranceCertificates.pdf>
5. Prior to starting work:
- Be in receipt of the Notice to Proceed letter issued by the Fund.

Special Notice

Please be advised that Part 10 of the Proposal you signed requires your office to be timely and responsive in your submissions.

The Fund may begin the process to exercise its rights regarding your bid bond and/or making an adverse determination of responsiveness if you do not provide your proper and timely attention to our requests.

STATE UNIVERSITY CONSTRUCTION FUND INFORMATION FOR BIDDERS

Section 1 Definitions

All definitions set forth in the Agreement are applicable to the Notice to Bidders, Information for Bidders and the Proposal, all of which documents are hereinafter referred to as the Bidding Documents.

Section 2 Issuance of Bidding and Contract Documents

Drawings and Specifications will be issued by the Consultant upon request after payment of the deposit specified in the Notice to Bidders.

Section 3 Proposals

- (1) Proposals must be submitted in duplicate on the forms provided by the Fund. They shall be addressed to the Fund in a sealed envelope, provided by the Fund, marked with the name and address of the bidder, the title of the Project and the Project number. The Fund accepts no responsibility for Proposals that may be delivered by any courier or other messenger service that does not contain all of the above-noted information on the outside of a sealed envelope. Facsimile or email copies of the Proposal will not be accepted by the Fund.
- (2) All blank spaces in the Proposal must be filled in and, except as otherwise expressly provided in the Bidding Documents; no change is to be made in the phraseology of the Proposal or in the items mentioned therein.
- (3) Proposals that are illegible or that contains omissions, alterations, additions or items not called for in the Bidding Documents may be rejected as informal. In the event any bidder modifies, limits or restricts all or any part of its Proposal in a manner other than that expressly provided for in the Bidding Documents, its Proposal may be rejected as informal.
- (4) Any Proposal may be considered informal which does not contain prices in words and figures in all of the spaces provided or which is not accompanied by a bid security in proper form. In case any price shown in words and its equivalent shown in figures do not agree, the written words shall be binding upon the bidder. In case of a discrepancy in the prices contained in the Proposal forms submitted in duplicate by the bidder, the Proposal form which contains the lower bid shall be deemed the bid of the bidder; provided, however, the Fund at its election may consider the Proposal of such bidder informal.
- (5) If the Proposal is made by a corporation, the names and places of residence of the president, secretary and treasurer shall be given. If by a partnership, the names and places of residence of the partners shall be given. If by a joint venture, the names and addresses of the members of the joint venture shall be given. If by an individual, the name and place of residence shall be given.

- (6) No Proposal will be considered which has not been deposited with the Fund at the location designated in and prior to the time of opening of bids designated in the Bidding and Contract Documents or prior to the time of opening as extended by Addendum.
- (7) Bids may be modified, withdrawn or canceled only in writing or by email notice received by the Fund prior to the time of opening of bids designated in the Bidding and Contract Documents. A written or email notice of modification, withdrawal or cancellation shall be marked by the bidder with the name and address of the bidder, the title of the Project and the Project number. Upon receipt by the Fund, a duly authorized employee of the Fund shall note thereon the date and time of receipt and shall thereupon attach said written or email notice of modification, withdrawal or cancellation to the envelope submitted by the bidder pursuant to subdivision (1) of this Section. *Bid Modification email address: modifymybid@suny.edu . Submit modification amount only, (i.e. "deduct" or "add" \$XXX, not revised total bid amount. For email notice, submit modification as an attachment in portable document format (PDF) on bidder's letterhead signed by a duly authorized representative of the bidder.*
- (8) Permission will not be given to modify, explain, withdraw or cancel any Proposal or part thereof after the time designated in the Bidding and Contract Documents for the opening of bids, unless such modification, explanation, withdrawal or cancellation is permitted by law and the Fund is of the opinion that it is in the public interest to permit the same.

Section 4 Examination of Bidding and Contract Documents

- (1) Prospective bidders shall examine the Bidding and Contract Documents carefully and, before bidding, shall make written request to the Consultant (with a copy thereof to the Fund) for an interpretation or correction of any ambiguity, inconsistency or error therein which should be discovered by a reasonably prudent bidder. Such interpretation or correction as well as any additional Contract provision the Fund shall decide to include will be issued in writing by the Consultant as an Addendum, which will be sent to each person recorded as having received a copy of the Bidding and Contract Documents from the Consultant, and which also will be available at the places where the Bidding and Contract Documents are available for inspection by prospective bidders. Upon such emailing or delivery and making available for inspection, such Addendum will become a part of the Bidding and Contract Documents and will be binding on all bidders whether or not the bidder receives or acknowledges the actual notice of it. Prospective bidders are responsible for ensuring that all addenda have been incorporated into the bid. The requirements contained in all Bidding and Contract Documents shall apply to all Addenda.
- (2) Only the written interpretation or correction so given by Addendum shall be binding. Prospective bidders are warned that no trustee, officer, agent or employee of the Fund or the Consultant is authorized to explain or interpret the Bidding and

Contract Documents by any other method, and any such explanation or interpretation, if given, must not be relied upon.

Section 5 Computation of Bid

- (1) In computing their bids, bidders are not to include the sales and compensating use taxes of the State of New York or of any city and county in the State of New York for any supplies or materials which are incorporated into the completed Project as the same is exempt from such taxes.
- (2) Unit prices may be inserted in the Proposal by the Fund or the bidder at the discretion of the Fund. Any unit prices listed in the Proposal by the Fund are based upon the Consultant's appraisal of a fair cost for the work involved. Such listed prices will be binding upon both the bidder and the Fund unless the bidder wishes to change any of such unit prices by crossing out the listed unit price and inserting a revised unit price. Such revised unit price shall not be binding upon the Fund unless it accepts the same, in writing, before it issues a Notice of Award. In the event the Proposal contains blank spaces for unit prices or the bidder revises any stated unit price, the amount of such unit prices for additions shall not vary by more than 15 percent from the prices inserted by the bidder for deductions, and, if the variance of such prices exceeds 15 percent, the Fund may adjust the deduction price inserted by the bidder so that it is only 15 percent lower than the addition price inserted by the bidder. In addition, the Fund may adjust any unit price filled in by a bidder to an amount agreeable to both the bidder and the Fund or it may reject any unit prices.
- (3) Alternates, if any, listed in the Proposal and described in Section 01 23 00 (Section B) of the Technical Specifications shall be accepted in the order indicated and will be used in combination with the Total Bid to determine the low bidder. Unit prices will not be used to determine the low bidder.

Section 6 Payment of Bid Security

- (1) Each Proposal must be accompanied by the required amount of the bid security in the form of a bank draft or certified check, payable at sight to the Fund and drawn on a bank authorized to do business in the United States, or by a Bid Bond, on a form approved by the Fund, duly executed by the bidder as principal and having as surety thereon a surety company or companies, approved by the Fund, authorized to do business in the State of New York as a surety. Attorneys-in-fact who execute a Bid Bond on behalf of a surety must affix thereto a certified and effectively dated copy of their power of appointment.
- (2) The Fund will return, without interest, the bid security of a bidder, unless such security be in the form of a Bid Bond which will not be returned by the Fund, in accordance with the following procedure:
 - a. To all bidders except the apparent three (3) lowest bidders within two (2) working days after the opening of bids.

- b. To any bidder submitting a Bid Bond, meeting the requirements of paragraph (1) hereof, after the opening of bids, as a substitute for a bank draft or certified check within two (2) working days after the Fund's approval of such Bid Bond.
 - c. To the apparent three (3) lowest bidders, unless their bid security was previously returned, within two (2) working days after delivery to the Fund by the successful bidder of the executed Agreement and required Bonds, or within two (2) working days of the Fund's rejection of all bids or within two (2) working days after the expiration of forty-five (45) calendar days after the bid opening or within the time to which the issuance of a Notice of Award may have been extended, whichever event shall occur last.
- (3) The Fund reserves the right to deposit bid security drafts or checks pending final disposal of them.

Section 7 Qualifications of Bidders

- (1) A bidder must demonstrate, to the satisfaction of the Fund, that it has successfully completed three (3) contracts similar in size, scope and complexity to this contract within the last five (5) years.
- a. For scope and complexity, similar work is defined as elevator modernization and new elevator installation work, as further described in the General Requirements, Section 01 11 00, Description of Work.
 - b. The determination of relevant contract experience in terms of size, scope and complexity will be at the sole discretion of the Fund.
 - c. The above three projects shall be submitted on Attachment A of the Proposal, "List of Completed Similar Construction Projects" (the List). If the List is not provided or is missing information, and/or is found to have erroneous information or information that is no longer current, a Proposal may be rejected as not responsive. If requested by the Fund, the bidder may be permitted to add missing information, modify and/or explain erroneous information or information that is no longer current on the List. Modifications and/or explanations of the List must be received within 48 hours of receipt of the Fund's request.
- (2) All prospective bidders must demonstrate to the satisfaction of the Fund that they have the skill and experience, as well as the necessary facilities, ample financial resources, ability to manage staff and subcontractors effectively, ability to anticipate and plan construction work for optimal progress, ability to create, strive for and maintain working environments and relationships that are constructive, communicative and cooperative, organization and general reliability to do the work to be performed under the provisions of the Contract in a satisfactory manner and within the time specified.

- (3) Each bidder must demonstrate to the satisfaction of the Fund that it has working capital available for the Project upon which it is bidding in an amount equal to 15 percent of the first \$100,000 of the amount of its Total Bid plus 10 percent of the next \$900,000 plus 5 percent of the remainder of its Total Bid. Working capital is defined as the excess of current assets over current liabilities. The Fund defines current assets as assets which can be reasonably expected to be converted into cash within a year, and current liabilities as debts which will have to be paid within a year.
- (4). The Fund may make such investigation as the Fund deems necessary to determine the responsibility of any bidder or to determine the ability of any bidder to perform the Work. Bidders shall furnish to the Fund all information and data required by the Fund, including complete financial data, within the time and in the form and manner required by the Fund. The Fund reserves the right to reject any bid if the evidence required by the Fund is not submitted as required or if the evidence submitted by or the investigation of any bidder fails to satisfy the Fund that the bidder is responsible, or is able or qualified to carry out the obligations of the Contract or to complete the Work as contemplated.
- (5) At the time of the bid opening, all bidders and subcontractors, domestic and foreign, must be in compliance with New York State business registration requirements. Contact the NYS Department of State regarding compliance.

Section 8 Submission of Post-Bid Information

- (1) Within forty-eight (48) hours after the opening of bids, each of the apparent three lowest bidders, unless otherwise directed by the Fund or otherwise provided in the Bidding and Contract Documents, shall submit to both the Fund and the Consultant:
 - a. Evidence of a completed New York State Uniform Contracting Questionnaire (Vendor Responsibility Questionnaire For-Profit Construction (CCA-2)). Either email confirmation that the bidder's CCA-2 is current and certified in the New York State VendRep System (VendRep) within the last six months from the bid date, or deliver a certified paper format CCA-2, including all attachments, to the Fund.

The Fund recommends that vendors file the required CCA-2 online via the VendRep. To enroll in and use the VendRep, see the VendRep Instructions at http://www.osc.state.ny.us/vendrep/vendor_index.htm or go directly to the VendRep online at <https://portal.osc.state.ny.us>. To request assistance, contact the Office of the State Comptroller's ("OSC") Help Desk at 866-370-4672 or 518- 408-4672 or by email at ciohelpdesk@osc.state.ny.us.

The paper format CCA-2 and accompanying definitions are available on the OSC website at the following location:

http://www.osc.state.ny.us/vendrep/forms_vendor.htm

- b. A working plan and schedule showing clearly, in sequence and time-scale, all significant activities of the work. The working plan and schedule shall be in the form of suitable charts, diagrams or bar graphs and shall be based on the Contractor's logic and time estimates for the anticipated time of commencement and completion of the work and its significant phases and activities and the interrelationship between such significant activities and other items pertinent to the work. This requirement is in addition to and not a substitute for the schedule requirements of Section 3.02 (Time Progress Schedule) of the Agreement. Although the working plan and schedule submitted shall not be used in determining the lowest responsible bidder, failure to submit the working plan and schedule may result in the rejection of the Proposal as not responsive.
- c. The names and addresses of the bidder's proposed subcontractor for the Asbestos Abatement work of any value, and proposed subcontractors for Electrical Work, the Heating, Ventilating and Air-Conditioning Work and the Plumbing Work for each of said work categories valued at \$20,000 or more.
 - i. For each proposed subcontractor named, provide a completed "List of Completed Similar Construction Projects (the List)." If the List is not provided or is missing information, and/or is found to have erroneous information or information that is no longer current, a proposed subcontractor may be rejected. If requested by the Fund, the bidder may be permitted to add missing information, modify and/or explain erroneous information or information that is no longer current on the List; modifications and/or explanations of the List must be received promptly after receipt of the Fund's request.
 - ii. Only one proposed subcontractor should be named for each of such trades. Proposed subcontractors of the bidder may not be changed except with the specific written approval of the Fund.
 - iii. The naming of the bidder itself for any of such work is not acceptable and may result in rejection of the bidder unless the bidder can demonstrate to the Fund that it has successfully completed or substantially completed three (3) contracts similar in size, scope and complexity for the designated work within the last five (5) years. The determination of relevant contract experience in terms of size, scope and complexity will be at the sole discretion of the Fund.
 - iv. The bidder will be required to establish, to the satisfaction of the Consultant and the Fund, the reliability and responsibility of each of their said proposed subcontractors to furnish and perform the work described in the sections of the Specifications pertaining to each of such proposed subcontractors' respective trades. By submission of the "List of Completed Similar Construction Projects," a proposed subcontractor must be able to demonstrate that they have successfully completed or substantially completed three (3) contracts similar in size, scope and complexity for the designated work within the last five (5) years. The

determination of relevant contract experience in terms of size, scope and complexity will be at the sole discretion of the Fund.

- v. For each of the proposed subcontractors, the bidders must submit to the Fund, seven (7) calendar days after the bid opening, evidence of a completed New York State Uniform Contracting Questionnaire (Vendor Responsibility Questionnaire For-Profit Construction (CCA-2)). Either email confirmation that the subcontractor's CCA-2 is current and certified in the New York State VendRep System (VendRep) within the last six months from the bid date, or deliver a certified paper format CCA-2, including all attachments, to the Fund.
 - vi. In the event that the Fund and the Consultant reject any of said proposed subcontractors, the bidder, within two (2) working days after receipt of notification of such rejection, shall again submit to the Fund and the Consultant the name of another proposed subcontractor in place of the one rejected and it will be required to establish to the satisfaction of the Fund and the Consultant the reliability and responsibility of said proposed subcontractor; When naming another proposed subcontractor, the bidder must promptly submit the proposed subcontractor's completed "List of Completed Similar Construction Projects" and their completed CCA-2.
 - vii. The bidder will not be permitted to submit another proposed subcontractor if it designated itself for any of the aforesaid categories of work.
 - viii. Proposed subcontractors of the bidder, approved by the Fund and the Consultant, must be used on the work for which they were proposed and approved and they may not be changed except with the specific written approval of the Fund.
- d. A breakdown of the amount of the bidder's Proposal. Such breakdown shall be prepared in accordance with the format included herein to as Appendix "A". No bidder shall be barred from revising, in the Contract breakdown required under the provisions of Section 4.08 of the Agreement, the various amounts listed in the bid breakdown required under the provisions of this Section. The amount set forth in said bid breakdown will not be considered as fixing the basis for additions to or deductions from the Contract consideration.
- (2) Within seven (7) calendar days after the opening of bids, the three low bidders shall submit to the Fund for its approval a Service-Disabled Veteran-Owned Businesses Utilization Plan on the form SDV-UP, which is bound in Section 00 21 13 30, Service-Disabled Veteran-Owned Business Utilization Plan (SDV-UP), of the Project Manual.
 - (3) Except for Contracts of \$100,000 or less, and unless otherwise directed by the Fund, **within seven (7) calendar days** after the opening of bids, the three low

bidders shall **submit to the Fund** for its approval, a Minority and Women-owned Business Enterprise Utilization Plan (UP-1). The Utilization Plan should include the description of work and the estimated dollar value of subcontracts and supply contracts that will be awarded to Minority and Women-owned Business Enterprises.

- (4) Except for contracts of \$100,000 or less, **within seven (7) calendar days** after the opening of bids, the three low bidders shall **submit to the Fund** for its approval, an Equal Employment Opportunity Statement.
- (5) The above information and such other information as the Fund or the Consultant may request or obtain will be used by the Fund in determining the reliability and responsibility of the bidder and any proposed subcontractors. Each bidder must comply promptly with all requests by the Fund and the Consultant for information and must actively cooperate with the Fund and the Consultant in their efforts to determine the qualifications of the bidder and any proposed subcontractors. Failure to comply with the latter may result in the rejection of the Proposal as not responsive. All information required to be furnished to the Fund under this Section shall be sent to the State University Construction Fund, Director of Capital Procurement, H. Carl McCall SUNY Building, 353 Broadway, Albany, New York 12246 or emailed to the Fund at SUCF.ConstructionBids@suny.edu unless a signed original is required to be submitted.

Section 9 Award of Contract

- (1) The award of the Contract shall be made to the bidder submitting the lowest bid that is responsive to the solicitation and who, in the sole opinion of the Fund, is qualified to perform the work involved and is responsible and reliable. The Fund shall determine the lowest bid by adding to or deducting from the Total Bid of the bidders the additive or deductive alternates, if any, the Fund elects to accept after the opening of the Proposals. Alternates will be accepted in the order they are set forth in the Proposal. The unit prices set forth in the Proposal for additions to or deductions from the work shall not be considered in determining the lowest bid.
- (2) The right is reserved, if, in the Fund's judgment, the public interest will be promoted thereby, to reject any or all Proposals, to waive any informality in any Proposal received or to afford any bidder an opportunity to remedy any deficiency resulting from a minor informality or irregularity. Without limiting the generality of the foregoing:
 - a. A Proposal may be rejected as not responsive if the bidder fails to furnish the required bid security or to submit the data required with or after its Proposal and this Information for Bidders.
 - b. A Proposal may be rejected as not responsive if the bidder cannot show to the satisfaction of the Fund: (i) that it has the necessary qualifications and capital; or (ii) that it owns, controls or can procure the necessary plant and equipment to commence the work at the time prescribed in the Contract and thereafter to prosecute and complete the work at the rate, or within the time

specified; or (iii) that it is not already obligated by the performance of so much other work as is likely to delay the commencement, prosecution or completion of the work contemplated by the Contract.

- c. A Proposal will be rejected as not responsive if it does not provide for the completion of the work by the date of completion specified in the Proposal.
- (3) The Fund also expressly reserves the right to reject any Proposal as not responsive if, in its opinion, considering the work to be performed, the facts, as to the bidder's business or technical organization, plant, financial and other sources of business experience compared with the work bid upon, justify rejection.
- (4) The award of the Contract shall not be construed as a guarantee by the Fund that the plant, equipment and the general scheme of operations and other data submitted by the bidder with or after its Proposal is either adequate or suitable for the satisfactory performance of the work.

Section 10 Required Bonds and Insurance

- (1) Unless otherwise agreed to by the Fund, within ten (10) working days after the receipt of Notice of Award, the Contractor shall procure, execute and deliver to the Fund and maintain, at its own cost and expense:
 - a. A Performance Bond and a Labor and Material Bond, both of which Bonds shall be on the form prescribed by the Fund and in an amount not less than 100 percent of the total amount of the Contract awarded to the Contractor by the Fund. Said Bonds must be issued by a surety company approved by the Fund and authorized to do business in The State of New York as a surety.
 - b. Proof of insurances with the specific coverage and limits required in Article V of the Agreement. Acceptable documents are:
 - i. Proof of NYS Worker's Compensation is only accepted on the C-105.2 or U-26.3 form.
 - ii. Proof of Disability insurance is only accepted on the DB-120.1 form.

Use the link below for a description of the required forms for Workers Compensation and Disability:

<http://www.osc.state.ny.us/agencies/guide/MyWebHelp/Content/XI/18/G.htm>

 - iii. All other proof of insurance must be on the Acord 25 Certificate of Liability Insurance form. Only an original (wet) signature is accepted. Stamped or digitized signatures (fax or email) are not acceptable.
- c. The 120-day Schedule required by the General Requirements, Special Conditions paragraph 01 32 16, titled "Project Schedule."

- (2) Attorneys-in-fact who execute said Bonds on behalf of a surety must affix thereto a certified and effectively dated copy of their power of appointment.

Section 11 Requirements and Procedures for Participation by New York State - Certified Minority and Women -Owned Business Enterprises and Equal Employment Opportunities for Minority Group Members and Women

- (1) New York State Law

Pursuant to New York State Executive Law Article 15-A and Parts 140-145 of Title 5 of the New York Codes, Rules and Regulations, the Fund is required to promote opportunities for the maximum feasible participation of New York State-certified Minority and Women-owned Business Enterprises (“MWBEs”) and the employment of minority group members and women in the performance of the Fund contracts.

- (2) Business Participation Opportunities for MWBEs

- a. For purposes of this solicitation, the Fund hereby establishes goals (see Section 01 26 43 Amendments (Section E) of the General Requirements for goals) for New York State-certified Minority-owned Business Enterprise (“MBE”) participation and for New York State-certified Women-owned Business Enterprise (“WBE”) participation (based on the current availability of MBEs and WBEs). A contractor (“Contractor”) on any contract resulting from this procurement (“Contract”) must document its good faith efforts to provide meaningful participation by MWBEs as subcontractors and suppliers in the performance of the Contract. To that end, by submitting a bid, the bidder agrees that the Fund may withhold payment pursuant to any Contract awarded as a result of this bid pending receipt of the required MWBE documentation. A directory of MWBEs can be viewed at: <https://ny.newnycontracts.com>. For guidance on how the Fund will evaluate a Contractor’s “good faith efforts,” refer to 5 NYCRR § 142.8 and Article VI, Section 6.03(2)d of the Agreement.
- b. The bidder understands that only sums paid to MWBEs for the performance of a commercially useful function, as that term is defined in 5 NYCRR § 140.1, may be applied towards the achievement of the applicable MWBE participation goal. The portion of a contract with an MWBE serving as a supplier that shall be deemed to represent the commercially useful function performed by the MWBE shall be 60 percent of the total value of the contract. The portion of a contract with an MWBE serving as a broker that shall be deemed to represent the commercially useful function performed by the MWBE shall be the monetary value for fees, or the markup percentage, charged by the MWBE.
- c. In accordance with 5 NYCRR § 142.13, the bidder further acknowledges that if it is found to have willfully and intentionally failed to comply with the MWBE participation goals set forth in a Contract resulting from this RFP, such finding constitutes a breach of contract and the Fund may withhold payment as liquidated damages.

- d. Such liquidated damages shall be calculated as an amount equaling the difference between: (1) all sums identified for payment to MWBEs had the Contractor achieved the contractual MWBE goals; and (2) all sums actually paid to MWBEs for work performed or materials supplied under the Contract.
- e. By submitting a bid or proposal, a bidder agrees to demonstrate its good faith efforts to achieve the applicable MWBE participation goals by submitting evidence thereof in a format prescribed by the Fund.
- f. Additionally, a bidder will be required to submit the following documents and information as evidence of compliance with the foregoing:
 - i. An MWBE Utilization Plan in accordance with paragraph (3) of the above Section 8 Submission of Post Bid Information. Any modifications or changes to an accepted MWBE Utilization Plan after the Contract award and during the term of the Contract must be reported on a revised MWBE Utilization Plan and submitted to the Fund for review and approval.
 - ii. The Fund will review the submitted MWBE Utilization Plan and advise the bidder of the Fund acceptance or issue a notice of deficiency within 30 calendar days of receipt.
 - iii. If a notice of deficiency is issued, the bidder will be required to respond to the notice of deficiency within seven (7) business days of receipt by submitting to the Fund a written remedy in response to the notice of deficiency. If the written remedy that is submitted is not timely or is found by the Fund to be inadequate, the Fund shall notify the bidder within five (5) business days and direct them accordingly. Failure to cooperate with the Fund in a timely manner may be grounds for disqualification of the bid or proposal.
- g. The Fund may disqualify a bidder as being non-responsive under the following circumstances:
 - i. If a bidder fails to submit an MWBE Utilization Plan;
 - ii. If a bidder fails to submit a written remedy to a notice of deficiency;
 - iii. If a bidder fails to cooperate with the Fund; or
 - iv. If the Fund determines that the bidder has failed to document good faith efforts.
- h. The successful bidder will be required to attempt to utilize, in good faith, any MBE or WBE identified within its MWBE Utilization Plan, during the performance of the Contract. Requests for a partial or total waiver of established goal requirements made subsequent to Contract Award may be made at any time during the term of the Contract to the Fund, but must be made no later than prior to the submission of a request for final payment on the Contract.

- i. Over the term of the Contract, the successful bidder will be required to submit to the Fund a monthly M/WBE Contractor Compliance & Payment Reporting in the electronic format prescribed by the Fund, documenting the progress made toward achievement of the MWBE goals of the Contract.

(3) Equal Employment Opportunity Requirements

- a. By submission of a bid in response to this solicitation, the bidder agrees with all of the terms and conditions of Schedule "A" - Provisions Required to Be Inserted by Law, including Clause 11 - Equal Employment Opportunities for Minorities and Women. The bidder is required to ensure that it and any subcontractors awarded a subcontract for the construction, demolition, replacement, major repair, renovation, planning or design of real property and improvements thereon (the "Work"), except where the Work is for the beneficial use of the bidder, undertake or continue programs to ensure that minority group members and women are afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability or marital status. For these purposes, equal opportunity shall apply in the areas of recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff, termination, and rates of pay or other forms of compensation. This requirement does not apply to: (i) work, goods, or services unrelated to the Contract; or (ii) employment outside New York State.
- b. The bidder will be required to submit an Equal Employment Opportunity Policy Statement in accordance with paragraph (4) of the above Section 8 Submission of Post Bid Information.
- c. If awarded a Contract, bidder shall submit a Monthly Employment Utilization Report and shall require each of its subcontractors to submit a Monthly Employment Utilization Report in the electronic format prescribed by the Fund during the term of the Contract.
- d. Further, pursuant to Article 15 of the Executive Law (the "Human Rights Law"), all other State and Federal statutory and constitutional non-discrimination provisions, the Contractor and sub-contractors will not discriminate against any employee or applicant for employment because of race, creed (religion), color, sex, national origin, sexual orientation, military status, age, disability, predisposing genetic characteristic, marital status or domestic violence victim status, and shall also follow the requirements of the Human Rights Law with regard to non-discrimination on the basis of prior criminal conviction and prior arrest.

(4) Reports, Records and Documentation

- a. The Contractor shall file with the Fund monthly reports in the electronic form prescribed by the Fund regarding actions taken pursuant to this Section as well as a list of and value of subcontracts and supply contracts.

- b. The Contractor shall permit access to its books, records and accounts by the Fund for purposes of investigation to ascertain compliance with the provisions of this Section. The Contractor shall include this provision in every subcontract so that such provision will be binding upon each subcontractor.
- c. Failure to comply with the foregoing requirements entitles the Fund to take such action as the withholding of funds, suspension or termination of the Contract or such other actions or enforcement proceedings as allowed by the Contract. Such failure may also result in a finding of non-responsiveness, non-responsibility and/or a breach of the Contract.

Section 12 Service-Disabled Veteran-Owned Businesses (SDVOBs)

Article 17-B of the Executive Law enacted in 2014 acknowledges that Service-Disabled Veteran-Owned Businesses (SDVOBs) strongly contribute to the economies of the State and the nation. As defenders of our nation and in recognition of their economic activity in doing business in New York State, bidders are strongly encouraged and expected to consider SDVOBs in the fulfillment of the requirements of the project. Such partnering may be as subcontractors, subconsultants, suppliers, protégés or other supporting roles. SDVOBs can be readily identified on the directory of certified businesses at http://ogs.ny.gov/Core/docs/CertifiedNYS_SDVOB.pdf.

- a. Bidders are strongly encouraged to the maximum extent practical and consistent with legal requirements of the State Finance Law and the Executive Law, to use responsible and responsive SDVOBs as subcontractors to provide meaningful participation. Furthermore, bidders are reminded that they must continue to utilize small, minority and women-owned businesses consistent with Article 15-A of Executive Law. Utilizing SDVOBs in State contracts will help create more private sector jobs, rebuild New York State's infrastructure, and maximize economic activity to the mutual benefit of the bidder and its SDVOB partners. SDVOBs will promote the bidder's optimal performance under any potential agreements, thereby fully benefiting the public sector programs that are supported by associated public procurements.
- b. Public procurements can drive and improve the State's economic engine through promotion of the use of SDVOBs by its bidders. The State, therefore, expects bidders to provide maximum assistance to SDVOBs in the performance of any potential agreement. The potential participation by all kinds of SDVOBs will deliver great value to the State and its taxpayers.

Section 13 Encouraging Use of New York State Business Businesses in Contract Performance

New York State businesses have a substantial presence in State contracts and strongly contribute to the economies of the state and the nation. In recognition of their economic activity and leadership in doing business in New York State, bidders/proposers for this contract for commodities, services or technology are strongly encouraged and expected to consider New York State businesses in the fulfillment of the requirements of the

contract. Such partnering may be as subcontractors, suppliers, protégés or other supporting roles.

Bidders/proposers need to be aware that all authorized users of this contract will be strongly encouraged, to the maximum extent practical and consistent with legal requirements, to use responsible and responsive New York State businesses in purchasing commodities that are of equal quality and functionality and in utilizing services and technology. Furthermore, bidders/proposers are reminded that they must continue to utilize small, minority and women-owned businesses, consistent with current State law.

Utilizing New York State businesses in State contracts will help create more private sector jobs, rebuild New York's infrastructure, and maximize economic activity to the mutual benefit of the Contractor and its New York State business partners. New York State businesses will promote the Contractor's optimal performance under the contract, thereby fully benefiting the public sector programs that are supported by associated procurements.

Public procurements can drive and improve the State's economic engine through promotion of the use of New York businesses by its Contractors. The State therefore expects bidders/proposers to provide maximum assistance to New York businesses in their use of the contract. The potential participation by all kinds of New York businesses will deliver great value to the State and its taxpayers.

- (1) Information on the availability of New York State subcontractors and suppliers is available from: New York State Department of Economic Development, Procurement Assistance Unit, One Commerce Plaza, Albany, New York 12245, Phone: (518) 474-7756, Fax: (518) 486-7577.

Section 14 Single Contract Responsibility

This is a single bid general construction project. The Contractor submitting the bid is responsible for all work associated with this Project.

Section 15 Examination of Site

A pre-bid conference and project walk-through will be held with all bidders, subcontractors and other planholders at the time and place specified in Section 00 25 13 Pre-Bid Meetings. No individual or additional walk-throughs will be provided. Failure to attend a walk-through shall not be the cause for extra payment.

Section 16 Procurement Lobbying Law Restrictions

Please be advised that State Finance Law Sections 139-j and 139-k include and impose certain restrictions on communications between the Fund and Bidders during the procurement process. A bidder is restricted from making contacts from the earliest notice of intent to solicit offers through receipt of the Notice to Proceed ("restricted period") to other than designated staff, unless it is a contact that is included among certain statutory exceptions set forth in State Finance Law Sections 139-j(3)(a). Designated staff is identified in the Notice to Bidders as of the date hereof. Fund

employees are also required to obtain certain information when contacted during the restricted period and make a determination of the responsibility of the bidder pursuant to these two statutes. Certain findings of non-responsibility can result in rejection for contract award and in the event of two findings within a 4-year period, the Offerer/bidder is debarred from obtaining governmental Procurement contracts.

Bidders must also disclose whether any governmental entity has made a finding of non-responsibility within the previous four years based upon the failure to comply with Section 139-j of the State Finance Law or intentionally providing false or incomplete information to a governmental entity. The Form for this disclosure is on the last page of the Proposal and the bidder must fill out and sign this Form.

Further information about these requirements can be found on the State Office of General Services website (<https://ogs.ny.gov/ACPL/>) and the Fund website (<https://sucf.suny.edu/opportunities/procurement-lobbying-act-policy-and-procedures>).

Section 17 Requirements for Construction Activities To Address Public Health or Safety

The Bidder agrees it is responsible for complying with any and all health and safety requirements issued by federal, state or local entities, including but not limited to New York State Governor Office Executive Orders, New York State Department of Health rules, regulations and guidance, and other New York State, Fund or Campus laws, rules, regulations or requirements that exist or may be issued and/or amended during the bidding and/or performance of work on this Project.

With respect to the COVID-19 pandemic, Bidder specifically acknowledges and agrees that the NYS DOH Emergency Regulations, Interim COVID-19 Guidance for Construction Projects, "Guidance", and Campus Rules and Regulations, as set forth in General Requirements Section 01 35 29 10, all in effect at the time of this bid, are made a part of the contract work for this Project. Bidder affirms that all costs and time associated with compliance with the current Emergency Regulations, Guidance and Campus Rules and Regulations are included in its bid. These requirements include, but are not limited to, requiring workers and personnel to continuously wear masks until mask use is no longer required by the Fund. The current Emergency Regulations and Guidance are available at the following websites:

<https://regs.health.ny.gov/regulations/emergency> (Use this link for COVID-19 Emergency Regulations including the Emergency Regulations issued August 27, 2021 - Face Coverings for COVID-19 Prevention)

<https://forward.ny.gov/industries-reopening-phase#phase-one-construction>

Notwithstanding the foregoing, Bidder agrees to comply with the Emergency Regulations, Guidance, and Campus Rules and Regulations as it may be amended or superseded in the future.

MWBE and SDVOB BUSINESS REQUIREMENTS FOR PROSPECTIVE BIDDERS

Consistent with the Fund's commitment and in accordance with Article 15-A and Article 17-B of the New York State Executive Law, contractors are required to ensure that good faith efforts are made to include meaningful participation by Minority and Women-Owned Businesses (MWBE) and Service Disabled Veteran-owned Businesses (SDVOB) in the Fund's construction program. The requirements apply to all Fund contracts in excess of \$100,000. The intent of the program is to encourage and assist in developing business relationships between prime contractors, MWBE and SDVOB subcontractors and suppliers. Contractors must be diligent and creative in order to develop a plan that complies with the program.

Receipt of the MWBE and SDVOB Utilization Plan is required within seven (7) calendar days after the bid opening. The MWBE and SDVOB firms listed on the Plan (s) are businesses the bidder intends to utilize on the project and are subject to verification by the Fund.

For many projects, it may be necessary to solicit the cooperation of principal subcontractors to assist in developing a meaningful utilization plan. In order for good faith efforts to be effective, contractors should begin plan development during pre-bid. A matter of special consequence is the Fund's contract requirement that principal subcontractors are nominated within 48 hours of the bid opening therefore, in the selection of principal subcontractors, the prime contractor should consider subcontractors who demonstrate efforts to assist with program requirements.

Consequently, we recommend that the prime contractor evaluate the level of MWBE and SDVOB participation and the good faith efforts to be provided by their principal subcontractors. Although ultimate responsibility for program compliance is with the prime contractor, the Contract Documents require that all subcontractors also comply with the contract provisions. **An inability to meet the contractual goals when subcontractor cooperation is not present, does not excuse the prime contractor from the responsibility.**

MWBE firms must be currently certified by New York State Department of Economic Development Corp. (ESDC) as a Minority or Women-Owned Business to comply with the program requirements. Certified firms are included in the Directory of Certified Minority and Women-Owned Business Enterprises. The Directory is available on the Internet at <https://ny.newnycontracts.com/>. It is the responsibility of the contractor to ensure firms are included in the Directory at the time of submission.

SDVOB firms must be certified by the Office of General Services, Division of Service-Disabled Veterans' Business Development to comply with the program requirements. Certified firms are included in a Directory of New York State Certified Service-Disabled Veteran-Owned Businesses. The Directory is available on the Internet at <https://online.ogs.ny.gov/SDVOB/search>

MWBE and SDVOB goals are separate and cannot be substituted one for the other. However, firms that hold both MWBE and SDVOB certifications may be included in both the MWBE and SDVOB Utilization Plans toward satisfaction of both goals.

The actual services provided by the MWBE and SDVOB firms must be essential in the performance of the scope of work for the applicable contract. **Utilization of a certified MWBE OR SDVOB firm as a conduit or pass through for participation credit is strictly prohibited.** It is the discretion of the Fund to determine whether services are essential in the performance of the scope of work and/or the appropriateness of work allowed for lower tier subcontracting in accordance with practices generally accepted in the construction industry. The services the MWBE and/or SDVOB firm will provide must be among those explicitly identified in the profile (codes) of firms as listed in the NYS Directory of MWBE and/or SDVOB firms respectively. Firms submitted or who participate in the project outside of these conditions and without specific prior approval by the Fund will not be credited toward the Utilization Plan goals for the contract.

If you have questions or need assistance related to the Fund's Minority and Women's Business requirements call the Opportunities Program Unit at (518) 320-1650 or email SUCF.OpportunityAdmin@suny.edu

MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISES

“GOOD FAITH EFFORTS”

GUIDELINES

Construction contracts covered by Executive Law Article 15-A

Contractors are required to ensure that good faith efforts are made to include meaningful participation by Minority and Women-Owned Business Enterprises (MWBE) in the Fund’s construction program. Contractors must be diligent and creative in order to develop a plan that complies with the program. If your firm incurs difficulty, these Guidelines will assist in preparing the documentation required to support your efforts. Responses to the information in the Guidelines must be provided to the Fund’s Opportunities Programs Office in an item-by-item format following the numerical sequence as presented. If you need assistance, please contact the office at: (518) 320-1650.

GUIDELINES:

1. Provide a brief statement of any special circumstances which are preventing NYS certified MWBE firms from participating. Include any documentation you deem relevant which may help us in evaluating your efforts.
2. The names of general circulation, trade association, and MWBE-oriented publications in which you solicited certified MWBEs for the purposes of complying with your participation goals related to this contract. Include a list identifying the date(s) that all solicitations for certified MWBE participation were published in any of the above publications.
3. A list of all the searches for certified MWBE firms, obtained by using the NYS MWBE Directory. <https://ny.newnycontracts.com/> that were solicited for purposes of complying with your certified MWBE participation levels. Search lists must include NAICS codes and can include key word searches.
4. Copies of notices, dates of contact, letters, and other correspondence as proof that solicitations were made in writing and copies of such solicitations.
5. Telephone logs with details including date, person(s) communicated with and outcome.
6. Provide copies of responses to your solicitations received by you from certified MWBEs.
7. Provide a description of any contract documents, plans, or specifications made available to certified MWBEs for purposes of soliciting their bids and the date and manner in which these documents were made available.
8. Provide documentation of any negotiations between you and the MWBEs undertaken for purposes of complying with the certified MWBE participation goals.
9. Provide documentation to substantiate quotes that were submitted by NYS certified MWBE firms that were deemed as too high or not cost effective.
10. List efforts made to reasonably structure the scopes of work for purposes of subcontracting with NYS certified MWBEs.
11. Provide a list and include the dates of any pre-bid, pre-award, or other events attended with NYS certified MWBE firms

MWBE UTILIZATION PLAN FORM (UP-1) INSTRUCTIONS

The MWBE Utilization Plan (UP-1) is required to be submitted by the three low bidders within seven (7) calendar days after the bid opening. The ideal Plan should include a mix of MBE and WBE subcontractor and supplier participation. However, if either goal includes more than one third in supplies/material a compelling explanation should be attached. Submission of a Plan which fails to at least meet each goal shall be accompanied by documentation of specific efforts undertaken both pre and post bid. (see “good faith efforts” guidelines)

The Contractor will be required to provide sufficient documentation of the efforts made in the development of the MWBE Plan. The documentation should be responsive to “good faith efforts” guidelines and demonstrate the contractor’s commitment to providing opportunities for MBE and WBE firms in the development of the Plan.

The Fund will review the MWBE Utilization Plan and notify the contractor of any deficiencies and determine necessary actions to bring the Plan into compliance. The firms listed will be contacted for verification of participation. A copy of the approved Plan will be provided to the contractor after issuance of the Fund’s Notice of Award. **Be advised, The Fund does not issue its Notice of Award without an approved MWBE Plan and the Construction Contract may be withheld.**

For assistance with the directory and/or questions regarding the Utilization Plan (UP-1) contact the Opportunities Program Office at (518) 320-1650 or via e-mail:
SUCF.OpportunityAdmin@suny.edu.

Submit Initial Plan to: Robbilee Luedtke, Procurement Assistant
SUCF.ConstructionBids@suny.edu

Submit Plan Modifications to: SUCF.OpportunityAdmin@suny.edu.

MWBE UTILIZATION PLAN FORM (UP-1) INSTRUCTIONS

Only firms holding “current” New York State certification status are acceptable for participation credit.

INITIAL PLAN	Initial Utilization Plan submittal
PLAN MODIFICATION	Update to the Approved Plan
CONTRACT INFORMATION	Project Number, Contract Number, Bid Date, Contract Award Value, MWBE Contract Goals
CONTRACTOR INFORMATION	Company Name, Company Address, Contact Name, Contact Title, Phone, Fax, Email
SUBCONTRACTOR INFORMATION	<p>List the MBE and WBE firms your firm intends to utilize on the project. Include the Company Name, Street Address, Contact Name, and Email Address. Check the appropriate box: MBE <u>or</u> WBE.</p> <p>*Dual certified firms may be used as either but <u>not</u> both within their certification product code. MBE and WBE firms must be certified by the NYS Department of Economic Development, Division of Minority and Women Business Development. The directory of certified Minority and Women-owned Business Enterprises is available on the internet at http://ny.newnycontracts.com/FrontEnd/VendorSearchPublic.asp.</p>
CONTRACT WITH	Indicate if the participation is via a subcontractor and not direct from prime. Prime contractor is responsible for ensuring participation included in the Plan by subcontractors is executed.
MODIFICATION TYPE (if applicable)	<p>*Prior approval must be obtained from the Fund for decrease in participation or deletion of a firm. A letter of explanation is required on page 2. Supporting documentation of efforts must be submitted to the Fund, with the explanation.</p> <ul style="list-style-type: none"> ▪ NO CHANGE - for firms on the approved plan with no modifications to report. ▪ ADD – for firms that you are adding to the plan. ▪ DELETE – for firms you are removing from the original approved plan. For any deletions or decreases in subcontract value, an explanation is required on page 2. ▪ UPDATE – for firms whose value is being modified from original utilization plan, decreases to original plan value, an explanation is required on page 2.
FEDERAL I.D. NUMBER	Provide an <u>accurate</u> federal identification number for each MBE / WBE subcontractor or supplier.
DESCRIPTION OF WORK	<p>Provide a brief, but specific description of work to be performed or supplies to be purchased from the MBE or WBE subcontractor or supplier.</p> <p>Check the appropriate box Subcontractor, Supplier, or Broker</p> <p><u>Construction Supplier</u> - 60% credit: Firms that sell goods out of their revolving inventory.</p> <p><u>Brokers/Construction Manufacturers’ Representatives</u> – Credit is the monetary value for fees, or the markup percentage, charged by the MWBE. Firms serving as a third-party intermediary between consumers of items and manufacturers, suppliers, or other entities.</p> <p>The services the MBE or WBE will provide must be among those explicitly identified in the firm’s profile (codes) as listed in the NYS MWBE Directory of Certified Firms (https://ny.newnycontracts.com). Firms who participate in the project outside of these conditions <u>will not</u> be credited toward the MWBE Utilization Plan and goals for the contract.</p>
INITIAL PLAN VALUE	Total value of the signed Subcontract
MODIFIED PLAN VALUE	Total value of the revision to the signed Subcontract. Prior approval must be obtained from the Fund for a decrease in participation or deletion of a firm. A letter of explanation is required on page 2. Supporting documentation of efforts must be submitted to the Fund, with the explanation.
SUBCONTRACTOR/SUPPLIER SCHEDULE	<p>The anticipated start and completion dates for each MBE WBE subcontractor or supplier.</p> <p>*Do not include the overall construction schedule for the life of the entire project.</p>
SIGNATURE	Provide the Name, Title and Email address and Signature of a Company Officer.

OPPORTUNITIES PROGRAM OFFICE MWBE UTILIZATION PLAN (UP-1)

SUCF Project No.: _____

☐ Initial Plan ☐ Plan Modification

Contract No.: _____ Bid Date: _____ Contract Award Value (base bid + alternates): _____ Goals: MBE% _____ WBE% _____

Contractor: _____ Address: _____

Contact Name & Title: _____

Phone: _____ Fax: _____ E-mail: _____

Subcontractor Name, Address & E-mail	Check One (if applicable)	Federal ID No.	Description of Work or Supplies	Initial Plan Value	Modified Plan Value*	Subcontractor/Supplier Schedule	
						Start Date	End Date
Company Name: Street Address: Contact Name: E-mail address: <input type="checkbox"/> MBE <input type="checkbox"/> WBE Contract with: _____	<input type="checkbox"/> NO CHANGE <input type="checkbox"/> ADD <input type="checkbox"/> DELETE <input type="checkbox"/> UPDATE		<input type="checkbox"/> Subcontractor <input type="checkbox"/> Supplier <input type="checkbox"/> Broker				
Company Name: Street Address: Contact Name: E-mail address: <input type="checkbox"/> MBE <input type="checkbox"/> WBE Contract with: _____	<input type="checkbox"/> NO CHANGE <input type="checkbox"/> ADD <input type="checkbox"/> DELETE <input type="checkbox"/> UPDATE		<input type="checkbox"/> Subcontractor <input type="checkbox"/> Supplier <input type="checkbox"/> Broker				
Company Name: Street Address: Contact Name: E-mail address: <input type="checkbox"/> MBE <input type="checkbox"/> WBE Contract with: _____	<input type="checkbox"/> NO CHANGE <input type="checkbox"/> ADD <input type="checkbox"/> DELETE <input type="checkbox"/> UPDATE		<input type="checkbox"/> Subcontractor <input type="checkbox"/> Supplier <input type="checkbox"/> Broker				
Company Name: Street Address: Contact Name: E-mail address: <input type="checkbox"/> MBE <input type="checkbox"/> WBE Contract with: _____	<input type="checkbox"/> NO CHANGE <input type="checkbox"/> ADD <input type="checkbox"/> DELETE <input type="checkbox"/> UPDATE		<input type="checkbox"/> Subcontractor <input type="checkbox"/> Supplier <input type="checkbox"/> Broker				

In accordance with the Fund's Contract Documents and Executive Law Article 15-A, my firm intends to utilize the NYS certified MBE/WBE firms listed above for the services and/or supplies indicated on the Plan. I understand the firms listed may be contacted for verification of participation. False representations may result in penalties including but not limited to, withholding of payments and/or termination of this agreement. I understand that I must immediately notify the Opportunities Program Office and request approval prior to any changes to this Plan.

Print Name & Title _____

Company Officer's Signature _____

Director, Opportunities Program _____

Date _____

E-mail _____

Date _____

SUCF Project No.: _____ Contract No.: _____ Contractor: _____

***If the Utilization Plan Modification reflects a decrease in value from the original plan or if a firm is substituted, please provide a detailed explanation below and attach supporting documentation.**

<u>Subcontractor Name</u>	<u>Certification Type</u>	<u>Explanation</u>
<u>Subcontractor Name</u>	<u>Certification Type</u>	<u>Explanation</u>
<u>Subcontractor Name</u>	<u>Certification Type</u>	<u>Explanation</u>
<u>Subcontractor Name</u>	<u>Certification Type</u>	<u>Explanation</u>

In accordance with the Fund's Contract Documents and Executive Law Article 15-A, my firm intends to utilize the NYS certified MBE/WBE firms listed above for the services and/or supplies indicated on the Plan. I understand the firms listed may be contacted for verification of participation. False representations may result in penalties including but not limited to, withholding of payments and/or termination of this agreement. I understand that I must immediately notify the Opportunities Program Office and request approval prior to any changes to this Plan.

Print Name & Title _____

Company Officer's Signature _____

Director, Opportunities Program _____

Date _____

E-mail _____

Date _____

MWBE and SDVOB BUSINESS REQUIREMENTS FOR PROSPECTIVE BIDDERS

Consistent with the Fund's commitment and in accordance with Article 15-A and Article 17-B of the New York State Executive Law, contractors are required to ensure that good faith efforts are made to include meaningful participation by Minority and Women-Owned Businesses (MWBE) and Service Disabled Veteran-owned Businesses (SDVOB) in the Fund's construction program. The requirements apply to all Fund contracts in excess of \$100,000. The intent of the program is to encourage and assist in developing business relationships between prime contractors, MWBE and SDVOB subcontractors and suppliers. Contractors must be diligent and creative in order to develop a plan that complies with the program.

Receipt of the MWBE and SDVOB Utilization Plan is required within seven (7) calendar days after the bid opening. The MWBE and SDVOB firms listed on the Plan (s) are businesses the bidder intends to utilize on the project and are subject to verification by the Fund.

For many projects, it may be necessary to solicit the cooperation of principal subcontractors to assist in developing a meaningful utilization plan. In order for good faith efforts to be effective, contractors should begin plan development during pre-bid. A matter of special consequence is the Fund's contract requirement that principal subcontractors are nominated within 48 hours of the bid opening therefore, in the selection of principal subcontractors, the prime contractor should consider subcontractors who demonstrate efforts to assist with program requirements.

Consequently, we recommend that the prime contractor evaluate the level of MWBE and SDVOB participation and the good faith efforts to be provided by their principal subcontractors. Although ultimate responsibility for program compliance is with the prime contractor, the Contract Documents require that all subcontractors also comply with the contract provisions. **An inability to meet the contractual goals when subcontractor cooperation is not present, does not excuse the prime contractor from the responsibility.**

MWBE firms must be currently certified by New York State Department of Economic Development Corp. (ESDC) as a Minority or Women-Owned Business to comply with the program requirements. Certified firms are included in the Directory of Certified Minority and Women-Owned Business Enterprises. The Directory is available on the Internet at <https://ny.newnycontracts.com/>. It is the responsibility of the contractor to ensure firms are included in the Directory at the time of submission.

SDVOB firms must be certified by the Office of General Services, Division of Service-Disabled Veterans' Business Development to comply with the program requirements. Certified firms are included in a Directory of New York State Certified Service-Disabled Veteran-Owned Businesses. The Directory is available on the Internet at <https://online.ogs.ny.gov/SDVOB/search>

MWBE and SDVOB goals are separate and cannot be substituted one for the other. However, firms that hold both MWBE and SDVOB certifications may be included in both the MWBE and SDVOB Utilization Plans toward satisfaction of both goals.

The actual services provided by the MWBE and SDVOB firms must be essential in the performance of the scope of work for the applicable contract. **Utilization of a certified MWBE OR SDVOB firm as a conduit or pass through for participation credit is strictly prohibited.** It is the discretion of the Fund to determine whether services are essential in the performance of the scope of work and/or the appropriateness of work allowed for lower tier subcontracting in accordance with practices generally accepted in the construction industry. The services the MWBE and/or SDVOB firm will provide must be among those explicitly identified in the profile (codes) of firms as listed in the NYS Directory of MWBE and/or SDVOB firms respectively. Firms submitted or who participate in the project outside of these conditions and without specific prior approval by the Fund will not be credited toward the Utilization Plan goals for the contract.

If you have questions or need assistance related to the Fund's Minority and Women's Business requirements call the Opportunities Program Unit at (518) 320-1650 or email SUCF.OpportunityAdmin@suny.edu

SDVOB UTILIZATION PLAN FORM INSTRUCTIONS

The SDVOB Utilization Plan is required to be submitted by the three low bidders within seven (7) calendar days after the bid opening. Submission of a Plan which fails to at least meet each goal shall be accompanied by documentation of specific efforts undertaken both pre and post bid. (See “good faith efforts” guideline)

The Contractor will be required the contractor to provide sufficient documentation of the efforts made in the development of the SDVOB Plan. The documentation should be responsive to “good faith efforts” guidelines and demonstrate the contractor’s commitment to providing opportunities to SDVOB firms in the development of the Plan.

The Fund will review the SDVOB Utilization Plan and notify the contractor of any deficiencies and determine necessary actions to bring the Plan into compliance. The firms listed will be contacted for verification of participation. A copy of the approved Plan will be provided to the contractor after issuance of the Fund’s Notice of Award.

For assistance with the directory and/or questions regarding the SDVOB Utilization Plan contact the Opportunities Program Office at (518) 320-1650 or via e-mail:

SUCF.OpportunityAdmin@suny.edu.

Submit Initial Plan to: Robbilee Luedtke, Procurement Assistant

SUCF.ConstructionBids@suny.edu

Submit Plan Modifications to: SUCF.OpportunityAdmin@suny.edu.

OPPORTUNITIES PROGRAM OFFICE SDVOB UTILIZATION PLAN

SUCF Project No.: _____

☐ Initial Plan ☐ Plan Modification

SDVOB Goal % _____

Contract No.: _____ **Contract Award Value** (base bid + alternates): _____ **Bid Date:** _____

Are you a NYS Certified SDVOB?

Contractor: _____ **Federal I.D.** _____

☐ Yes ☐ No

Address: _____ **Contact Name & Title:** _____ **DSDVBD Control#**

Phone: _____ **Fax:** _____ **E-mail:** _____

Subcontractor Name, Address & E-mail	Check One (if applicable)	Federal ID No.	Description of Work or Supplies	Initial Plan Value	Modified Plan Value*	Subcontractor/Supplier Schedule	
						Start Date	End Date
Company Name: Street Address: Contact Name: E-mail address: Contract with:	<input type="checkbox"/> NO CHANGE <input type="checkbox"/> ADD <input type="checkbox"/> DELETE <input type="checkbox"/> UPDATE						
Company Name: Street Address: Contact Name: E-mail address: Contract with:	<input type="checkbox"/> NO CHANGE <input type="checkbox"/> ADD <input type="checkbox"/> DELETE <input type="checkbox"/> UPDATE						
Company Name: Street Address: Contact Name: E-mail address: Contract with:	<input type="checkbox"/> NO CHANGE <input type="checkbox"/> ADD <input type="checkbox"/> DELETE <input type="checkbox"/> UPDATE						
Company Name: Street Address: Contact Name: E-mail address: Contract with:	<input type="checkbox"/> NO CHANGE <input type="checkbox"/> ADD <input type="checkbox"/> DELETE <input type="checkbox"/> UPDATE						

In accordance with the Fund's Contract Documents and Executive Law Article 17-B, my firm intends to utilize the NYS certified SDVOB firms listed above for the services and/or supplies indicated on the Plan. I understand the firms listed may be contacted for verification of participation. False representations may result in penalties including but not limited to, withholding of payments and/or termination of this agreement. I understand that I must immediately notify the Opportunities Program Office and request approval prior to any changes to this Plan.

Print Name & Title _____

Company Officer's Signature _____

Director, Opportunities Program _____

Date _____

E-mail _____

Date _____

SUCF Project No.: _____ Contract No.: _____ Contractor: _____

If the Utilization Plan Modification reflects a decrease in value from the original plan or if a firm is substituted, please provide a detailed explanation below and attach supporting documentation.

<u>Subcontractor Name</u>	<u>Explanation</u>
<u>Subcontractor Name</u>	<u>Explanation</u>
<u>Subcontractor Name</u>	<u>Explanation</u>
<u>Subcontractor Name</u>	<u>Explanation</u>

In accordance with the Fund's Contract Documents and Executive Law Article 17-B, my firm intends to utilize the NYS certified SDVOB firms listed above for the services and/or supplies indicated on the Plan. I understand the firms listed may be contacted for verification of participation. False representations may result in penalties including but not limited to, withholding of payments and/or termination of this agreement. I understand that I must immediately notify the Opportunities Program Office and request approval prior to any changes to this Plan.

Print Name & Title _____

Company Officer's Signature _____

Director, Opportunities Program _____

Date _____

E-mail _____

Date _____

SDVOB UTILIZATION PLAN FORM INSTRUCTIONS

Only firms holding “current” New York State certification status are acceptable for participation credit

INITIAL PLAN	Initial Utilization Plan submittal
PLAN MODIFICATION	Update to the Approved Plan
CONTRACT INFORMATION	Project Number, Contract Number, Contract Award Value, Bid Date, SDVOB Contract Goal
CONTRACTOR INFORMATION	Company Name, Federal I.D., Address, Contact Name/Title, Phone, Fax, Email
SUBCONTRACTOR INFORMATION	<p>List the SDVOB firms your firm intends to utilize on the project. Include the Company Name, Street Address, Contact Name, and Email Address.</p> <p>SDVOB firms must be certified by the Office of General Services, Division of Service-Disabled Veterans’ Business Development to comply with the program requirements. Certified firms are included in a Directory of New York State Certified Service-Disabled Veteran-Owned Businesses. The Directory is available on the Internet at https://online.ogs.ny.gov/SDVOB/search</p>
CONTRACT WITH	Indicate if the participation is via a subcontractor and not direct from prime. Prime contractor is responsible for ensuring participation included in the Plan by subcontractors is executed.
MODIFICATION TYPE (if applicable)	<p>*Prior approval must be obtained from the Fund for decrease in participation or deletion of a firm. A letter of explanation is required on page 2. Supporting documentation of efforts must be submitted to the Fund, with the explanation.</p> <ul style="list-style-type: none"> ▪ NO CHANGE - for firms on the approved plan with no modifications to report. ▪ ADD – for firms that you are adding to the plan. ▪ DELETE – for firms you are removing from the original approved plan. For any deletions or decreases in subcontract value, an explanation is required on page 2. ▪ UPDATE – for firms whose value is being modified from original utilization plan, decreases to original plan value, an explanation is required on page 2.
FEDERAL I.D. NUMBER	Provide an <u>accurate</u> federal identification number for each SDVOB subcontractor or supplier.
DESCRIPTION OF WORK	<p>Provide a brief, but specific description of work to be performed or supplies to be purchased from the SDVOB subcontractor or supplier.</p> <p>The utilization of NYS certified Service-Disabled Veteran-owned Business Enterprises for non-commercially use function will not be counted toward goal credit on the utilization plan.</p>
INITIAL PLAN VALUE	Total value of the signed Subcontract
MODIFIED PLAN VALUE	Total value of the revision to the signed Subcontract. Prior approval must be obtained from the Fund for a decrease in participation or deletion of a firm. A letter of explanation is required on page 2. Supporting documentation of efforts must be submitted to the Fund, with the explanation.
SUBCONTRACTOR/SUPPLIER SCHEDULE	<p>The anticipated start and completion dates for each SDVOB subcontractor or supplier.</p> <p>*Do not include the overall construction schedule for the life of the entire project.</p>
SIGNATURE	Provide the Name, Title and Email address and Signature of a Company Officer.

SERVICE-DISABLED VETERANS-OWNED BUSINESSES

“GOOD FAITH EFFORTS” GUIDELINES

Construction contracts covered by Executive Law Article 17-B

Contractors are required to ensure that good faith efforts are made to include meaningful participation by Service-Disabled Veterans-Owned Businesses (SDVOB) in the Fund’s construction program. Contractors must be diligent and creative in order to develop a plan that complies with the program. If your firm incurs difficulty, these Guidelines will assist in preparing the documentation required to support your efforts. Responses to the information in the Guidelines must be provided to the Funds’ Opportunities Programs Office in an item-by-item format following the numerical sequence as presented. If you need assistance, please contact the office at: (518) 320-1650.

GUIDELINES:

1. Provide a brief statement of any special circumstances which are preventing NYS certified SDVOB firms from participating.
2. Provide the names of general circulation, trade association, and SDVOB-oriented publications in which you solicited certified SDVOBs for the purposes of complying with your participation goals related to this contract. Include a list identifying the date(s) that all solicitations for certified SDVOB participation were published in any of the above publications.
3. A list of all certified SDVOBs appearing in the OGS Division of Service-Disabled Veterans' Business Development's Directory <https://online.ogs.ny.gov/SDVOB/search> that were solicited for purposes of complying with your certified SDVOB participation levels.
4. Copies of notices, dates of contact, letters, and other correspondence as proof that solicitations were made in writing and copies of such solicitations.
5. Telephone logs with details including date, person(s) communicated with and outcome.
6. Provide copies of responses to your solicitations received by you from certified SDVOBs.
7. Provide a description of any contract documents, plans, or specifications made available to certified SDVOBs for purposes of soliciting their bids and the date and manner in which these documents were made available.
8. Provide documentation of any negotiations between you and the SDVOBs undertaken for purposes of complying with the certified SDVOB participation goals.
9. Provide documentation to substantiate quotes that were submitted by NYS certified SDVOB firms that were deemed as too high or not cost effective.
10. List efforts made to reasonably structure the scopes of work for purposes of subcontracting with NYS certified SDVOBs.
11. Provide a list and include the dates of any pre-bid, pre-award, or other events attended with NYS certified SDVOB firms.

Section 00 25 13 Pre-Bid Meetings

A pre-bid conference and project walk-through will be held on **10/26/2022** with all Bidders assembled at 10:00 a.m. in the SUNY New Paltz Walkkill Parking Lot. No individual or additional walk-throughs may be performed during the prebid time period. Vehicle parking must comply with campus regulations. Failure to attend a walk-through shall not be the cause for extra payment.

Attached is a copy of the Campus' standard regulations to be followed during walk through.

The pre-bid meeting shall be chaired by the Consultant with the following as the minimum agenda:

1. Confirm that bidders have a full bid package including any addenda issued to date.
Please be advised of new standard documents:
 - a. For projects bidding after February 7, 2020, see the Agreement dated February 2020 and review it in its entirety.
 - b. See Section 01 74 19 Construction Waste Management has been added at the request of the SUNY Sustainability Coalition. Please review the section and consider how to meet its goal for recycling at least 50% of the construction and demolition waste generated by this contract. (Hold questions on scope until item 5 below)
 - c. See Section 11 of 00 21 13 20 Information for Bidders for participation by MBEs and WBEs. The MBE/WBE participation goals for this project are:
 - 10 percent for MBE participation
 - 10 percent for WBE participation
 - d. See Section 12 of the Information for Bidders for participation by Service-Disabled Veteran-Owned Businesses. The SDVOB goal for this project is 3%
2. Review the timetable for submitting questions and issuing addenda.
3. Confirm the bid date and time.
4. Advise bidders that no changes to the Contract Documents are binding unless included in an addendum.
5. Review the project scope and schedule. Describe the main concepts of the project.

- a. Review the list of sole/single source products listed in General Requirements Section 01 26 43 Amendments (if any) and remind bidders that all costs for these products are covered by the base bid and no equivalents will be permitted.
6. Describe and discuss any Campus restrictions regarding security, access, worker prerequisites for entry to Campus, parking, and/or other restrictions that create cost and time difficulties related to this project.
7. Refer the bidders to the 00 21 13 20 Contractors Bid and Post Bid Checklist.
 - a. Review the specific Qualifications for Bidders and the nominated subcontractors as written in the Information for Bidders with the attendees.
 - b. Note that that Sections 7 Qualification of Bidders, 8 Submission of Post Bid Information and 10 Required Bonds in 00 21 13 20 Information for Bidders have been changed.
 - c. Note that all insurance must be provided by companies approved by the Fund, licensed to do business in the State of New York (“admitted” carriers), and rated at least “A-” by A.M. Best Company. Excess line insurers are not acceptable. Bidders and Asbestos subs must consult their insurance company/agent prior to bidding.
 - i. To clarify how to confirm if a bidder’s insurer is licensed to do business in the State of New York (“admitted” carriers), bidders and their insurance agents should search for their insurance companies at the following website: <https://www.dfs.ny.gov/insurance/tocol4.htm> . To search, select the link titled: “Insurance Company Search”.
 - ii. Excess line insurers are not acceptable and these firms are listed at this website: <http://www.elany.org/nyes.aspx?d=1002> .
 - d. If the Fund issues a Notice of Award and the bidder doesn’t provide acceptable insurance, then the Fund may rescind the award and take other actions to which it is entitled. All resulting costs and time delay are solely the responsibility of the bidder.
8. Note the change lowering the dollar threshold for named subcontractors back to \$20,000.
9. Have a question and answer session.
10. Tour the site and existing conditions.

NAME OF BIDDER

ADDRESS OF BIDDER

00 42 13 **PROPOSAL FOR SUCF PROJECT NO. 081058-00**

Upgrade Elevators Campus Wide

SUNY New Paltz

TO THE STATE UNIVERSITY CONSTRUCTION FUND:

1. The Bidder agrees that it shall complete all work necessary for substantial completion within 677 calendar days from receipt of the Notice to Proceed.

In the event the bidder fails to complete such work by said date, or within the time to which such completion may have been extended in accordance with the Contract Documents, the bidder agrees to pay the Fund liquidated damages in the sum of \$900 for each calendar day of delay in completing the work.

2. The bidder hereby declares that it has carefully examined all Bidding and Contract Documents and that it has inspected the actual location of the work, together with the local sources of supply, has satisfied itself as to all the quantities and conditions, and understands that in signing this Proposal, it waives all right to plead any misunderstanding regarding the same.
3. The bidder further understands and agrees that it is to do, perform and complete all work in accordance with the Contract Documents and to accept in full compensation therefor the amount of the TOTAL BID, modified by such additive or deductive alternates, if any, as are accepted by the Fund.
4. The bidder further agrees to accept the unit prices, if any, set forth in paragraph (5) hereof, except as the same may be modified pursuant to the provisions of Section 5 of the Information to Bidders, as full payment for any deletions, additions, modifications or changes to the portion or portions of work covered by said unit prices.

5. a. **BID CALCULATION:**

- (1) All work including Allowances (if any) listed in 5.d. below and excluding Field Order Allowance

_____	\$ _____
(In words)	(In figures)

- (2) Field Order Allowance: Schedule III and Section 4.05A of the Agreement
Two Hundred Eighty Five Thousand dollars

_____	\$ <u>285,000</u>
(In words)	(In figures)

- (3) TOTAL BID Add lines (1) and (2)

_____	\$ _____
(In words)	(In figures)

- b. **ALTERNATES:** Refer to 01 23 00 Alternates (Section B) of the General Requirements. The bidder proposes the following Additions to or Deductions from the TOTAL BID for the alternatives listed below:

<u>Alternate Number</u>	<u>Add/ Deduct</u>	<u>Amount In Words</u>	<u>Amount In Figures</u>
-----------------------------	------------------------	----------------------------	------------------------------

"None"

- c. **UNIT PRICES:** The bidder or the Fund may insert unit prices for the work or materials listed below. Refer to Section 5, paragraph (2) of the Information to Bidders, Schedule 1 and Article IV Section 4.04 of the Agreement for clarification. Such unit prices apply solely for additions. The Fund may, however, adjust any unit price filled in by a bidder to an amount agreeable to both the bidder and the Fund, or it may reject any unit price. The amount of any unit price accepted or agreed to by the Fund shall be reduced by 15 percent for any deduction in the work or materials covered by such unit price.

<u>Work or Materials Description</u>	<u>Amount in Words</u>	<u>Amount in Figures</u>
--	----------------------------	------------------------------

"None"

- d. **ALLOWANCES:** The bidder further agrees that its TOTAL BID includes the Allowance(s) listed below. Refer to Schedule II and Sections 4.04 and 4.05 of the Agreement for clarification:

<u>Work or Materials Description</u>	<u>Amount in Words</u>	<u>Amount in Figures</u>
--	----------------------------	------------------------------

"None"

6. By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his or her knowledge and belief: (a) 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; (b) unless otherwise required by law, the prices 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 (c) no attempt has been made or will be made by the bidder to induce any person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

A bid shall not be considered for award nor shall any award be made where (a), (b) and (c) 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 bid a signed statement which sets forth in detail the reasons therefor. Where (a), (b), and (c) above shall have not been complied with, the bid shall not be considered for award nor shall any award be made unless the General Manager of the Fund, or his designee, determines that such disclosure was not made for purposes 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 this Section.

7. The bidder agrees that if awarded the Contract, it will commence work upon receipt of the Notice to Proceed and that it will fully complete the work by the date stated or within the duration herein, as applicable.
8. The bidder acknowledges the receipt of the following addenda, but agrees that it is bound by all addenda whether or not listed herein.

<u>Addendum Number</u>	<u>Date</u>	<u>Addendum Number</u>	<u>Date</u>
_____	____/____/____	_____	____/____/____

_____/_____/_____/_____/_____
_____/_____/_____/_____/_____

9. The Omnibus Procurement Act of 1992, as amended, requires that, by signing this Proposal, the bidder certifies that whenever its Total Bid amount is greater than \$1,000,000: (a) it has made reasonable efforts to encourage the participation of New York State Business Enterprises as suppliers and subcontractors on this Project, and has retained the documentation of these efforts to be provided upon request to the State; (b) it has complied with the Federal Equal Opportunity Act of 1972 (P.L. 92-261), as amended; (c) it agrees to make reasonable efforts to provide notification to New York State residents of employment opportunities on this Project through listing any such positions with Community Services Division of the New York State Department of Labor, or providing such notification in such manner as is consistent with existing collective bargaining contracts or agreements. The bidder further agrees to document these efforts and to provide said documentation to the State and the Fund upon request, and agrees to cooperate with the State in these efforts. Documented efforts by a successful bidder shall consist of and be limited to showing that such bidder has:
- a. Solicited bids, in a timely and adequate manner, from New York State Business Enterprises including certified Minority and Women's owned Business Enterprises, or
 - b. Contacted the New York State Department of Economic Development to obtain listings of New York State Business Enterprises, or
 - c. Placed notices for subcontractors and suppliers in newspapers, journals and other trade publications distributed in New York State, or
 - d. Participated in bidder outreach conferences.
 - e. If the bidder determines that New York State Business Enterprises are not available to participate on the Contract as subcontractors or suppliers, the bidder shall provide a statement indicating the method by which such determination was made.
 - f. If the bidder does not intend to use subcontractors on the Contract, the bidder shall provide a statement verifying such intent.
10. The bidder submits herewith bid security in an amount not less than five (5) percent of the Total Bid. In the event that
- (a) the bidder's Total Bid is the lowest one submitted and the bidder does not timely provide the Post-Bid Information required under Section 8 of the Information for Bidders; or
 - (b) this Proposal is accepted by the Fund and the bidder shall refuse or neglect, within ten (10) working days after date of receipt of Notice of Award to:
 - (1) execute and deliver an Agreement in the form provided herein; or
 - (2) execute and deliver a Performance Bond and a Labor and Material Bond in the amounts required and in the form prescribed; or
 - (3) provide proof of insurances required in Article V of the Agreement; or
 - (4) provide the 120-day Schedule required by the General Requirements, Special Conditions paragraph 01 32 16, titled "Project Schedule;"
- then the bidder shall be liable to the Fund, as liquidated damages, for the amount of the bid security or the difference between the Total Bid of the bidder and the Total Bid of the bidder submitting the next lowest bid, whichever sum shall be higher, otherwise the total amount of the bid security will be returned to the bidder in accordance with the provisions set forth in the Information for Bidders.

The Fund may apply the bid security in full or partial payments, as the case may be, of said liquidated damages and in the event the bid security is less than the amount of liquidated damages to which the Fund is entitled, the bidder shall pay the difference, upon demand, to the Fund.

11. The bidder certifies that all wood products that are to be used in the performance of this Contract shall be in accordance with the Specifications and provisions of Section 167 b. of the State Finance Law which Section prohibits the purchase and use of tropical hardwoods.
12. The bidder affirms that it understands and agrees to comply with the procedures of the Fund relative to permissible contacts as required by Sections 139-j(3) and 139-j-(6)(b) of the State Finance Law.
13. The bidder certifies that all information provided or to be provided to the Fund in connection with this procurement is, as required by Section 139-k of the State Finance Law, complete, true and accurate.

Dated _____
(Legal name of person, partnership, joint venture, corporation, or LLC)

(If corporation, affix corporate seal) By _____
(Signature)
Title _____

Firm's Federal ID Number or Social Security Number as applicable _____

Firm's NYS SFS Vendor Identification Number _____

Check: Is Firm NYS-Certified* MBE? ☐ Yes WBE? ☐ Yes

*(*Defined as independent business concerns which are at least 51% owned and controlled by minority group members or women (citizens of the United States or permanent resident aliens who are Black, Hispanic, Asian or American Indian), whose ownerships in the concerns are real, substantial and continuing and who have and exercise the authority to independently control the decisions of the concerns)*

ATTENTION BIDDERS: ALSO FULLY EXECUTE PAGES P-5, P-6, P-7, P-8, P-9, P-10, AND P-11.

THE POST OFFICE ADDRESS OF THE BIDDER

Telephone No. _____ Email Address _____

If a Corporation

Name Address

_____, PRESIDENT _____

_____, SECRETARY _____

_____, 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 Corporation

Name Address

_____	_____
_____	_____
_____	_____

STATE UNIVERSITY CONSTRUCTION FUND
H. Carl McCall SUNY Building 353 Broadway • Albany, New York 12246
Offerer Disclosure of Prior Non-Responsibility Determinations

Name of Individual or Entity Seeking to Enter into the Procurement Contract:

Address:

Name and Title of Person Submitting this Form:

SUCF Project Number: _____

Date: _____

1. Has any Governmental Entity made a finding of non-responsibility regarding the individual or entity seeking to enter into the Procurement Contract in the previous four years? ☐ No ☐ Yes

If yes, please answer the next questions:

2. Was the basis for the finding of non-responsibility due to a violation of State Finance Law Section 139-j: ☐ No ☐ Yes

3. Was the basis for the finding of non-responsibility due to the intentional provision of false or incomplete information to a Governmental Entity? ☐ No ☐ Yes

4. If you answered "yes" to any of the above questions, please provide details regarding the finding of non-responsibility below.

Governmental Entity: _____

Date of Finding of Non-Responsibility: _____

Basis of Finding of Non-Responsibility: _____

(Add additional pages as necessary)

5. Has any Governmental Entity or other governmental agency terminated or withheld a Procurement Contract with the above-named individual or entity due to the intentional provision of false or incomplete information? ☐ No ☐ Yes

6. If yes, please provide details below.

Governmental Entity: _____

Date of Termination or Withholding of Contract: _____

Basis of Termination or Withholding: _____

(Add additional pages as necessary)

Offerer certifies that all information provided to SUCF with respect to State Finance Law Section 139-k is complete, true and accurate. Submit form with original signature with Proposal.

By: _____
Signature

Date

STATE UNIVERSITY CONSTRUCTION FUND
H. Carl McCall SUNY Building 353 Broadway • Albany, New York 12246
IRAN ENERGY SECTOR DIVESTMENT COMPLIANCE

Printed Name of Entity Seeking to Enter into the Contract:

Address:

Printed Name and Title of Person Executing Certification:

SUCF Project Number: _____

Pursuant to New York State Finance Law §165-a, Iran Divestment Act of 2012 (Act), the Office of General Services is required to post on its web site a list of persons who have been determined to engage in investment activities in Iran ("prohibited entities list"), as defined by the Act. New York State Public Authorities Law § 2879-c, with certain exceptions, prohibits the Fund from entering into or awarding a Contract with persons identified on the prohibited entities list.

CERTIFICATION:

By submission of this bid or proposal, each person (as defined in paragraph (e) of subdivision one of section one hundred sixty five-a of the state finance law) and each person signing on behalf of any other party certifies, and in the case of a joint bid or proposal or partnership each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each person is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the State finance law.

STATE OF)
)ss.:
COUNTY OF)

The undersigned, being duly sworn, says (a) I am duly authorized to execute this Certification and (b) I hereby certify, under penalty of perjury, that the forgoing Certification is in all respects true and accurate.

Signature of Person Executing
Certification: _____

Subscribed and sworn to before me this _____ day of _____, 20____.

Notary Public

Submit form with original signatures

Certification Regarding Sexual Harassment Prevention Policies Pursuant to State Finance Law §139-l

Dec 2018

ENCOURAGING USE OF NEW YORK STATE BUSINESSES IN CONTRACT PERFORMANCE

New York State businesses have a substantial presence in State contracts and strongly contribute to the economies of the state and the nation. In recognition of their economic activity and leadership in doing business in New York State, bidders/proposers for this contract for commodities, services or technology are strongly encouraged and expected to consider New York State businesses in the fulfillment of the requirements of the contract. Such partnering may be as subcontractors, suppliers, protégés or other supporting roles.

Bidders/proposers need to be aware that all authorized users of this contract will be strongly encouraged, to the maximum extent practical and consistent with legal requirements, to use responsible and responsive New York State businesses in purchasing commodities that are of equal quality and functionality and in utilizing services and technology. Furthermore, bidders/proposers are reminded that they must continue to utilize small, minority and women-owned businesses, consistent with current State law.

Utilizing New York State businesses in State contracts will help create more private sector jobs, rebuild New York's infrastructure, and maximize economic activity to the mutual benefit of the contractor and its New York State business partners. New York State businesses will promote the contractor's optimal performance under the contract, thereby fully benefiting the public sector programs that are supported by associated procurements.

Public procurements can drive and improve the State's economic engine through promotion of the use of New York businesses by its contractors. The State therefore expects bidders/proposers to provide maximum assistance to New York businesses in their use of the contract. The potential participation by all kinds of New York businesses will deliver great value to the State and its taxpayers.

Bidders/proposers can demonstrate their commitment to the use of New York State businesses by responding to the question below:

Will New York State Businesses be used in the performance of this contract? ☐ Yes ☐ No

SUCF Project Number: _____

If yes, identify New York State Business(es) that will be used; (list identifying information below).

(Attach additional identifying information with the bid as required)

By: _____ Date: _____
Signature

Print Name and Title: _____

Contractor Name: _____

Contractor Address: _____

EO 177 Certification

The New York State Human Rights Law, Article 15 of the Executive Law, prohibits discrimination and harassment based on age, race, creed, color, national origin, sex, pregnancy or pregnancy-related conditions, sexual orientation, gender identity, disability, marital status, familial status, domestic violence victim status, prior arrest or conviction record, military status or predisposing genetic characteristics.

The Human Rights Law may also require reasonable accommodation for persons with disabilities and pregnancy-related conditions. A reasonable accommodation is an adjustment to a job or work environment that enables a person with a disability to perform the essential functions of a job in a reasonable manner. The Human Rights Law may also require reasonable accommodation in employment on the basis of Sabbath observance or religious practices.

Generally, the Human Rights Law applies to:

- all employers of four or more people, employment agencies, labor organizations and apprenticeship training programs in all instances of discrimination or harassment;
- employers with fewer than four employees in all cases involving sexual harassment; and,
- any employer of domestic workers in cases involving sexual harassment or harassment based on gender, race, religion or national origin.

In accordance with Executive Order No. 177, the Bidder hereby certifies that it does not have institutional policies or practices that fail to address the harassment and discrimination of individuals on the basis of their age, race, creed, color, national origin, sex, sexual orientation, gender identity, disability, marital status, military status, or other protected status under the Human Rights Law.

Executive Order No. 177 and this certification do not affect institutional policies or practices that are protected by existing law, including but not limited to the First Amendment of the United States Constitution, Article 1, Section 3 of the New York State Constitution, and Section 296(11) of the New York State Human Rights Law.

Contractor Name: _____

By: _____ Date: _____
Signature

Print Name and Title: _____

State University Construction Fund

Bid proposal supplement

Attachment A – List of Completed Similar Construction Projects

Bidder Name:

SUCF Project No.: 81058-00

Bidders must provide three (3) example projects completed in the past five (5) years in which the Bidder served as the prime contractor. Example projects must be of similar size, scope and complexity to the project currently being bid, as further described in the General Requirements, Section 01 11 00, Description of Work. Each project must include the Owner/Agency, Award Date, Contract Amount, Date Completed, Contact Person, Telephone number of the contact, Architect and/or Engineer's Name, Contract Number, Contact Email, and the Project Title and a brief scope description. Reference contacts may be used to verify project size, scope, dollar value, percentages and quality of performance.

1.	Agency/Owner			Award Date	Contract Amount	Date Completed
	Agency/Owner Contact Person		Telephone No.	Designer Architect and /or Design Engineer		
	Contract No.	Contact Email	Project Title & Scope			
2.	Agency/Owner			Award Date	Contract Amount	Date Completed
	Agency/Owner Contact Person		Telephone No.	Designer Architect and /or Design Engineer		
	Contract No.	Contact Email	Project Title & Scope			
3.	Agency/Owner			Award Date	Contract Amount	Date Completed
	Agency/Owner Contact Person		Telephone No.	Designer Architect and /or Design Engineer		
	Contract No.	Contact Email	Project Title & Scope			
Completed By:				Phone Number: Email: Date:		

APPENDIX A

For SUCF Project No. 081058-00

BID BREAKDOWN

In the spaces provided below, insert the bid amounts for the various divisions listed.

<u>DIVISION OR SECTION</u>	<u>AMOUNT</u>
1. Division 1 - General Requirements	\$ _____
2. Division 2 - Asbestos Abatement	\$ _____
3. All other Division 2 work	\$ _____
4. Division 7 - Thermal & Moisture Protection	\$ _____
5. Division 8 - Openings	\$ _____
6. Division 9 - Finishes	\$ _____
7. Division 10 - Specialties	\$ _____
8. Division 14 – Conveying Equipment	\$ _____
9. Division 21 – Fire Suppression	\$ _____
10. Division 22 - Plumbing	\$ _____
11. Division 23 - HVAC	\$ _____
12. Division 26 - Electrical	\$ _____
13. Division 28 - Electronic Safety & Security	\$ _____
14. Sum of all lines above (Base Bid)	\$ _____
15. Field Order Allowance	\$ _____ 285,000 _____
Total Bid	\$ _____

1. This breakdown is not the basis for Contractor payment (Agreement Section 4.08).
2. The Total above should equal the amount in the Contractor's bid Proposal.

Note: Please indicate whether you believe that any information supplied herein is confidential and should be exempt from disclosure under the Freedom of Information Law.

☐ Yes☐ No

If "yes", you must identify the information you feel is confidential by placing an asterisk () in front of the appropriate number(s) and you are requested to attach an additional sheet(s) upon which the basis for such claim(s) is explained.*

Name of Contractor

BID BOND

BOND NO. _____

KNOW ALL PERSONS BY THESE PRESENTS, that

, having an office at

(hereinafter called the "Principal") and the

a corporation created and existing under the laws of
the State of _____,
having its principal office at

(hereinafter called the "Surety") are held and firmly
bound unto the State University Construction Fund
(hereinafter called the "Fund") in the full and just sum
of

_____ dollars (\$ _____)
good and lawful money of the United States of
America, or in the full and just sum of the difference
between the Total Bid of the Principal and the Total Bid
of the bidder submitting the next lowest bid, whichever
sum shall be higher, for the payment of which said sum
of money, well and truly to be made and done, the
Principal binds itself, its heirs, executors,
administrators, successors and assigns and the Surety
binds itself, its successors and assigns, jointly and
severally, firmly by these presents.

WHEREAS, the Principal has submitted to the Fund a
Proposal for

which Proposal is incorporated herein by reference and
made a part hereof as fully and to the same extent as
if set forth at length herein;

NOW, THEREFORE, the condition of this obligation is
such that in the event (1) the Principal's Total Bid is the
lowest one submitted and the Principal timely provides
the Post-Bid Information required under Sections 7 and
8 of the Information for Bidders or (2) the Fund shall
accept the Proposal of the Principal and the Principal
shall enter into a Contract with the Fund in accordance
with the terms of such Proposal and/or enter into
certain prescribed subcontracts in accordance with the
terms of such Proposal and give such Bond or Bonds,
proof of insurances, and 120-day Schedule as may be
specified in the Bidding or Contract Documents, then

this obligation shall be null and void, otherwise to
remain in full force and effect.

The Surety, for value received, hereby stipulates and
agrees that the obligation of said Surety and its Bond
shall be in no way impaired or affected by any
extension of the time within which the Fund may accept
the Proposal of the Principal and said Surety does
hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal has hereunto
set its hand and seal and the Surety has caused this
instrument to be signed by its

and its corporate seal to be hereunto affixed this
day of _____ 20____.

Principal

By

(If Corporation, affix corporate seal)

Surety

By

(If Corporation, affix corporate seal)

ACKNOWLEDGMENTS

(ACKNOWLEDGMENT BY PRINCIPAL, UNLESS IT BE A CORPORATION)

STATE OF)
) ss.:
COUNTY OF)

On this _____ day of _____, 20____, before me personally came

_____, to me known and known to me to be the person(s) described in and who executed the foregoing instrument and acknowledged that he executed the same.

Notary Public

(ACKNOWLEDGEMENT BY CORPORATION)

STATE OF NEW YORK)
COUNTY OF) SS:

On this _____ day of _____, 20____, before me personally came

_____, to me known, who, being by me duly sworn, did depose and say that he/she/they reside(s) in _____; that he/she/they is (are) the _____ (president or other officer or director or attorney in fact duly appointed) of the _____ (name of corporation), the corporation described in and which executed the above instrument; and that he/she/they signed his/her/their name(s) thereto by authority of the board of directors of said corporation.

Notary Public

;

(ACKNOWLEDGMENT BY SURETY COMPANY)

STATE OF)
) ss.:
COUNTY OF)

On this _____ day of _____, 20____, before me personally came

_____, to me known who, being by me

duly sworn, did depose and say that he resides in _____;

that he is the _____ of the

_____, the corporation described in and which executed 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; and that the liabilities of said company do not exceed its assets as ascertained in the manner provided by the laws of the State of New York.

Notary Public

00 43 13 10 INSTRUCTIONS FOR EXECUTION OF BID BOND

NOTE: All instructions are numbered in the sequence that they appear on the following Bid Bond sample:

1. Name of Principal.
- 1a. Address of Principal.
2. Surety name, address (*Note: Must be authorized to do business in NYS as surety*).
3. Surety's State of incorporation.
4. Surety's principal office.
5. Amount of bid security (*in words and figures OR "5% of amount of bid"*).
6. Correct project designation, including SUCF Project No.
7. "Attorney-in-Fact" (*or other authorized representative*) of Surety.
8. Execution date of Bond.
9. Name of Principal.
10. Original signature of Principal's officer (if corporation); partner (if partnership); or individual owner (facsimile or stamped signature not acceptable). *Note: If Principal's signatory is not a corporate officer, such other authorized representative's capacity to execute the Bond on behalf of Principal must be shown by a duly executed document reflecting the grant of such authority, e.g. by a copy of the appropriate Resolution of the Board of Directors of Principal).*
11. Corporate seal of Principal (if a corporation).
12. Name of Surety.
13. Original signature of Surety's Attorney-in-Fact (or other authorized representative). *Note: Facsimile or stamped signature not acceptable.*
14. Corporate seal of Surety. *Note: If the Bond is executed by joint venture, each member of the joint venture must affix its appropriate name, signature, seal, etc., as listed above. Changes, additions, or deletions in the text of the Fund's Bond form are not acceptable.*

The Bond must also have attached to it: (1) Surety Company's Power of Attorney (naming attorney executing Bond); (2) Surety's Certificate (date to be on or after date of Bond execution); (3) Surety's current Financial Statement (no more than two years old).

Note: On the Surety's Financial Statement, "surplus to policy holders" must be in an amount at least ten (10) times the amount of the bid security (Item "5" on Page BB-1).

BID BOND

BOND NO. _____

KNOW ALL PERSONS BY THESE PRESENTS, that

-1-

, having an office at

-1a-

(hereinafter called the "Principal") and the

-2-

a corporation created and existing under the laws of the State of **-3-**, having its principal office at

-4-

(hereinafter called the "Surety") are held and firmly bound unto the State University Construction Fund (hereinafter called the "Fund") in the full and just sum of

-5-

dollars (\$) good and lawful money of the United States of America, or in the full and just sum of the difference between the Total Bid of the Principal and the Total Bid of the bidder submitting the next lowest bid, whichever sum shall be higher, for the payment of which said sum of money, well and truly to be made and done, the Principal binds itself, its heirs, executors, administrators, successors and assigns and the Surety binds itself, its successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted to the Fund a Proposal for

-6-

which Proposal is incorporated herein by reference and made a part hereof as fully and to the same extent as if set forth at length herein;

NOW, THEREFORE, the condition of this obligation is such that in the event (1) the Principal's Total Bid is the lowest one submitted and the Principal timely provides the Post-Bid Information required under Sections 7 and 8 of the Information for Bidders or (2) the Fund shall accept the Proposal of the Principal and the Principal shall enter into a Contract with the Fund in accordance with the terms of such Proposal and/or enter into certain prescribed subcontracts in accordance with the terms of such Proposal and give such Bond or Bonds, proof of insurances, and 120-day Schedule as may be specified in the Bidding or Contract Documents, then

this obligation shall be null and void, otherwise to remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that the obligation of said Surety and its Bond shall be in no way impaired or affected by any extension of the time within which the Fund may accept the Proposal of the Principal and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal has hereunto set its hand and seal and the Surety has caused this instrument to be signed by its **-7-**

and its corporate seal to be hereunto affixed this day of **-8-** 20 .

-9-

Principal

-10-

By

(If Corporation, affix corporate seal)

-11-

-12-

Surety

-13-

By

(If Corporation, affix corporate seal)

-14-

INSTRUCTIONS FOR EXECUTION OF ACKNOWLEDGMENTS

NOTE: All instructions are numbered in the sequence that they appear on the following Acknowledgment sample:

Acknowledgment by Individual Principal:

1. State where executed.
2. County where executed.
3. Date of execution.
4. Month of execution.
5. Year of execution.
6. Name of Individual Principal.
7. Original signature of Notary before whom Acknowledgment is signed. *NOTE: Facsimile or stamped signature not acceptable.*
8. Attach stamp or seal of Notary, showing (current) date of expiration of commission.

Acknowledgment by Corporate Principal:

1. State where executed.
2. County where executed.
3. Date of execution.
4. Month of execution.
5. Year of execution.
6. Name of Principal's Corporate Officer (or authorized representative).
7. Residence of Principal's Corporate Officer (or authorized representative).
8. Title of Corporate Officer (or authorized representative).
9. Full name of Principal.
10. Original signature of Notary before whom Acknowledgment is signed. *NOTE: Facsimile or stamped signature not acceptable.*
11. Attach stamp or seal of Notary, showing (current) date of expiration of commission.

Acknowledgment By Surety:

1. State where executed.
2. County where executed.
3. Date of execution.
4. Month of execution.
5. Year of execution.
6. Name of Surety's Attorney-in-Fact (or authorized representative).
7. Residence of Surety's Attorney-in-Fact (or authorized representative).
8. "Attorney-in-Fact" (or other authorized representative) of Surety.
9. Full name of Surety.
10. Original signature of Notary before whom Acknowledgment is signed. *NOTE: Facsimile or stamped signature not acceptable.*
11. Attach stamp or seal of Notary showing (current) date of expiration of commission.

NOTE: The date of all Acknowledgments must be on or after the date of execution of the Bond (Item "8" on page BB-1).

ACKNOWLEDGMENTS

(ACKNOWLEDGMENT BY PRINCIPAL, UNLESS IT BE A CORPORATION)

STATE OF -1-)
) ss.:
COUNTY OF -2-)

On this -3- day of -4-, 20 -5-, before me personally came -6-
to me known and known to me to be the person(s) described in and who executed the foregoing instrument and
acknowledged that he executed the same.

-7-

Notary Public

-8-

(ACKNOWLEDGMENT BY PRINCIPAL, IF A CORPORATION)

STATE OF -1-)
) ss.:
COUNTY OF -2-)

On this -3- day of -4-, 20 -5-, before me personally came -6-
to me known who, being by me duly sworn, did depose and say that he resides in -7-;

that he is the -8- of the -9-
the corporation described in and which executed the foregoing instrument; that he knows the seal of said
corporation; that the seal affixed to said instrument is such corporate seal; that is was so affixed by order of the Board
of Directors of said corporation and that he signed h name thereto by like order.

-10-

Notary Public

-11-

(ACKNOWLEDGMENT BY SURETY COMPANY)

STATE OF -1-)
) ss.:
COUNTY OF -2-)

On this -3- day of -4-, 20 -5-, before me personally came -6-
to me known who, being by me duly sworn, did depose and say that he resides in -7-;

that he is the -8- of the -9-
the corporation described in and which executed the foregoing instrument; that he knows the seal of said
corporation; that the seal affixed to said instrument is such corporate seal; that is was so affixed by order of the Board
of Directors of said corporation and that he signed h name thereto by like order; and that the liabilities of
said company do not exceed its assets as ascertained in the manner provided by the laws of the State of New York.

-10-

Notary Public

State University Construction Fund AGREEMENT

This Agreement made as of the day of X, 20XX, by and between the State University Construction Fund, whose address is The H. Carl McCall SUNY Building, 353 Broadway, Albany, New York 12246, hereinafter referred to as the "Fund", and

hereinafter referred to as the "Contractor".

WITNESSETH:

The parties hereto agree that the Contractor shall (a) furnish and perform all work of every kind required and all other things necessary to complete in the most substantial and workmanlike manner the construction of

in strict accordance with the Contract Documents;

(b) complete all work necessary for substantial completion by
or within , starting after receipt of the Notice to Proceed,

[INSTRUCTIONS: Identify substantial completion date above utilizing only one method.]

or within the time to which such completion may have been extended in accordance with the Contract Documents; (c) in the event it fails to substantially complete all the work on time, pay to the Fund liquidated damages in the amount of

for each calendar day of delay of substantially completing all the work; and (d) do everything required by the Contract; subject, however, to the terms, provisions and conditions listed hereinafter.

Article I General Provisions

Section 1.01 Definitions

Where the following words and expressions are used in the Contract Documents it is understood that they have the meaning set forth as follows:

Allowance Any and all work and materials which may be required of the Contractor in performing work set forth under one or more allowances to this Contract shall be Work, as defined herein, which shall be performed in accordance with the base schedule for the performance of the Contractor's Work. Contractor shall not be entitled to an extension of time for the performance of an allowance or all allowances.

Consultant The Architect or Engineer named in the Notice to Bidders or such other person or firm designated by the Fund to provide general administration of the Contract and inspection of the work.

Bidding Documents Notice to Bidders, Information for Bidders and Proposals

Bonds Performance Bond and Labor and Material Bond

Delay For purposes of this document and as used herein and in any other contract documents between the Contractor and the Fund the word "delay" shall be interpreted broadly and shall include by way of example only and not by way of limitation: delay, disruption, interference, inefficiencies, impedance, hindrance, acceleration, resequencing, schedule impacts, lack of timeliness by the Fund and/or Consultant, and lack of coordination, cumulative impact of multiple change orders, delay and other impacts.

Contract or Contract The Agreement, Bonds, Specifications, Project Manual, Drawings, Addenda

Documents	issued prior to the opening of bids and Change Orders issued after award of the Contract.
Fund or Owner	State University Construction Fund
Notice of Award	Letter of Intent
Project	The facility or facilities to be constructed including all usual, appropriate and necessary attendant work shown on, described in or mentioned in the Contract.
Site	The area within the Contract limit lines, as shown on the Drawings, and all other areas upon which the Contractor is to perform work.
Substantial Completion	Substantial Completion is the completion of Work so that the Project can be fully occupied and used for the purposes for which it is intended. Substantial Completion includes: (1) completion of all work required for the issuance of a code compliance certificate, or a temporary approval for occupancy, completed in a manner that includes no uncorrected deficiency or material violation of the Building Code of New York State within the area or work for which the certificate is to be issued; (2) completion of all building systems and functional testing of said systems (other than tests that cannot be performed due to the seasonal environmental conditions in effect at the time of completion); (3) acceptance and approval of the Operating Instructions and Manuals and Training of Campus Personnel; and (4) the sum of values determined for Punch List work at the time of Substantial Completion shall not exceed one (1) percent of the amount of the Contract consideration unless otherwise agreed to by the Fund.
Work	The using, performing, installing, furnishing and supplying of all materials, equipment, labor, services and incidentals necessary or proper for or incidental to the successful completion of the Project and the carrying out of all

duties and obligations imposed upon the Contractor by the Contract.

Section 1.02 Captions

The titles or captions of Articles and Sections of the Contract are intended for convenience and reference purposes only and in no way define, limit or describe the scope or intent thereof or of the Contract or in any way affect the Contract.

Section 1.03 Nomenclature

Materials, equipment or other work described in words and abbreviations which have a well-known, technical or trade meaning shall be interpreted as having such meaning in connection with the Contract.

Section 1.04 Entire Agreement

The Contract constitutes the entire agreement between the parties hereto and no statement, promise, condition, understanding, inducement or representation, oral or written, expressed or implied, which is not contained herein shall be binding or valid and the Contract shall not be changed, modified, or altered in any manner except by an instrument in writing executed by the parties hereto.

Section 1.05 Successors and Assigns

The Contract shall bind the successors, assigns and representatives of the parties hereto.

Section 1.06 Accuracy and Completeness of Contract Documents

(1) The Contract Documents are complementary and what is called for by any one shall be as binding as if called for by all. The intention of the Documents is to include all materials, plant, equipment, tools, skill and labor of every kind necessary for the proper execution of the work and also those things which may be reasonably inferable from the Contract Documents as being necessary to produce the intended results.

(2) The Contract Documents contemplate a finished piece of work of such character and quality as is reasonably inferable from them. The Contractor acknowledges that the Contract consideration includes sufficient money allowance to make its work complete and operational and in compliance with good practice and it agrees that inadvertent minor discrepancies or omissions or the failure to show details or to repeat on any part of the Contract Documents the figures or notes given on another shall

not be the cause for additional charges or claims. In case of a conflict between any part or parts of the Contract Documents with any other part or parts thereof, as contrasted to an omission or failure to show details or to repeat on any part of the Contract Documents the figures or notes given on another part thereof, the following shall be given preference, in the order hereinafter set forth, to determine what work the Contractor is required to perform: (a) Addenda (later dates to take preference over earlier dates); (b) Amendments to Agreement; (c) Agreement; (d) Specifications; (e) Schedules; (f) Large scale detail Drawings (detail drawings having a scale of 3/4" and over); (g) Large scale plan and section Drawings (plan and section drawings having a scale equal to or larger than that used for the basic floor or site plan, as the case may be); (h) Small scale detail Drawings (detail drawings having a scale of less than 3/4"); and (i) Small scale plan and section Drawings (plan and section drawings having a scale less than that used for the basic floor or site plan, as the case may be). In the event of such a conflict between or among parts of the Contract Documents that are entitled to equal preference, the more expensive way of doing the work, the better quality or greater quantity of material shall govern unless the Fund otherwise directs.

Section 1.07 Organization of Contract Documents

The Specifications and Drawings are generally divided into trade sections for the purpose of ready references, but such division is arbitrary and such sections shall not be construed as the prescription by the Consultant or the Fund of the limits of the work of any subcontractor or as a determination of the class of labor or trade necessary for the fabrication, erection, installation or finishing of the work required. The Contractor will be permitted to allot the work of subcontractors at its own discretion regardless of the grouping of the Specifications and Drawings. It shall be the Contractor's responsibility to settle definitively with each subcontractor the portions of the work which the latter will be required to do. The Fund and the Consultant assume no responsibility whatever for any jurisdiction claimed by any of the trades involved in the work.

Section 1.08 Furnishing of Contract Documents

The Fund shall establish the format for the Contract Documents (hard copy and/or electronic media) at the start of the Project. The Contractor shall be furnished, free of charge, with two (2) copies of the Specifications and Drawings in the selected format(s). Any other copies of the Specifications and Drawings which the

Contractor may desire can be obtained at the Contractor's expense.

Section 1.09 Examination of Contract Documents and Site

By executing the Contract, the Contractor agrees that it has carefully examined the Contract Documents together with the site of the proposed work as well as its surrounding territory; that it is fully informed regarding all the conditions affecting the work to be done and the labor and materials to be furnished for the completion of the Contract; and that its information has been acquired by personal investigation and research and not in the estimates and records of the Fund.

Section 1.10 Invalid Provisions

If any term or provision of the Contract Documents or the application thereof to any person, firm or corporation or circumstance shall, to any extent, be invalid or unenforceable, the remainder of the Contract Documents, or the application of such terms or provisions to persons, firms or corporations or circumstances other than those to which it is held invalid or unenforceable, shall not be affected thereby and each term or provision of the Contract Documents shall be valid and be enforced to the fullest extent permitted by law.

Section 1.11 No Collusion or Fraud

The Contractor hereby agrees that the Contract was secured without collusion or fraud and that neither any officer nor any employee of the Fund has or shall have a financial interest in the performance of the Contract or in the supplies, work or business to which it relates, or in any portion of the profits thereof.

Section 1.12 Notices

(1) All notices permitted or required hereunder shall be in writing and shall be transmitted either:

- a. via certified or registered United States mail, return receipt requested;
- b. by personal delivery;
- c. by expedited delivery service; or
- d. by email if actually received by the Fund.
Contractor bears the burden of service by email and receipt of email by the Fund.

Such notices shall be addressed as follows or to such different addresses as the parties may from time to time designate:

The State University Construction Fund

Name:

Title: Project Coordinator

The H. Carl McCall SUNY Building

353 Broadway, Albany, NY 12246

Telephone Number:

E-mail address:

Contractor

Company Name:

Designated Contact Name:

Contact Title: Project Manager

Address:

Telephone Number:

E-mail Address:

(2) Any such notice shall be deemed to have been given either at the time of personal delivery or actual receipt by the Fund, or in the case of email, upon receipt by the Fund.

(3) The parties may, from time to time, specify any new or different address in the United States as their address for purpose of receiving notice under this Agreement by giving fifteen (15) days written notice to the other party sent in accordance herewith. The parties agree to mutually designate individuals as their respective representatives for the purposes of receiving notices under this Agreement. Additional individuals may be designated in writing by the parties for purposes of implementation and administration/billing, resolving issues and problems and/or for dispute resolution.

Section 1.13 Singular-Plural; Male-Female

As used in the Contract Documents, the singular of any word or designation, whenever necessary or appropriate, shall include the plural and vice versa, and the masculine gender shall include the female and neutral genders and vice versa.

Article II

Contract Administration and Conduct

Section 2.01 Consultant's Status

(1) The Consultant, as the Fund's representative, shall provide general administration of the Contract and inspection of the work. The Consultant will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the work, and it will not be responsible for the Contractor's failure to carry out the work in accordance with the Contract Documents. The Consultant's duties, services and

work shall in no way supersede or dilute the Contractor's obligation to perform the work in conformance with all Contract requirements, but it is empowered by the Fund to act on its behalf with respect to the proper execution of the work and to give instructions and/or direction when necessary to require such corrective measures as may be necessary, in its professional opinion, to insure the proper execution of the Contract or to otherwise protect the Fund's interest.

(2) The Consultant shall have the authority to stop the work or to require and/or direct the prompt execution thereof whenever such action may be necessary, in its professional opinion, to insure the proper execution of the Contract or to otherwise protect the interests of the Fund.

(3) Except as otherwise provided in the Contract, the Consultant shall determine the amount, quality, acceptability, fitness and progress of the work covered by the Contract and shall decide all questions of fact which may arise in relation to the interpretation of the plans and Specifications, the performance of the work and the fulfillment by the Contractor of the provisions of the Contract. The Consultant shall in the first instance be the interpreter of the provisions of the Contract and the judge of its performance and it shall use its power under the Contract to enforce its faithful performance.

Section 2.02 Finality of Decisions

(1) Any decision or determination of the Consultant under the provisions of the Contract shall be final, conclusive and binding on the Contractor unless the Contractor shall, within ten (10) working days after such decision, make and deliver to the Fund a verified written statement of its contention that the decision of the Consultant is contrary to a provision of the Contract. The Fund shall thereupon determine the validity of the Contractor's contention. Pending decision by the Fund, the Contractor shall proceed in accordance with the Consultant's decision.

(2) Wherever it is provided in the Contract Documents that an application must be made to the Fund and/or determination made by the Fund, the Fund's decision on such application and/or its determination under the Contract Documents shall be final, conclusive and binding upon the Contractor unless the Contractor, within ten (10) working days after receiving notice of the Fund's decision or determination, files a written statement with the Fund and the Consultant that it reserves its rights in connection with the matters covered by said decision

or determination and after a court of competent jurisdiction determines the Fund's said decision or determination to be fraudulent, capricious, arbitrary or so grossly erroneous as necessarily to imply bad faith, in an action brought in accordance with Section 4.24.

Section 2.03 Claims and Disputes

(1) If the Contractor claims (i) that any work it has been ordered to do is extra work or (ii) that it has performed or is going to perform extra work or (iii) that any action or omission of the Fund or the Consultant is contrary to the terms and provisions of the Contract, it shall:

- a. Promptly comply with such order;
- b. Notwithstanding the provisions of Section 1.12 of the Agreement and any other provisions of the Contract documents to the contrary, file with the Fund and the Consultant, within five (5) working days after being ordered to perform the work claimed by it to be extra work or within five (5) working days after commencing performance of the extra work, whichever date shall be the earlier, or within five (5) working days after the said action or omission on the part of the Fund or the Consultant occurred, a written notice of the basis of its claim and request a determination thereof,
- c. Notwithstanding the provisions of Section 1.12 of the Agreement and any other provisions of the Contract documents to the contrary, file with the Fund and the Consultant, within thirty (30) calendar days after said alleged extra work was required to be performed or said alleged extra work was commenced, whichever date shall be the earlier, or said alleged action or omission by the Fund or the Consultant occurred, a verified detailed statement, with documentary evidence, of the items and basis of its claim, including an initial and updated detailed Time Progress Schedule,
- d. Produce for the Fund's examination, upon notice from the Fund, such information and documentation as directed by the Fund, which shall include but not be limited to job cost reports and all estimates and documentation used to develop the Bid Proposal, all its books of account, bills, invoices, payrolls, subcontracts, time books, progress records, daily reports, bank deposit books, bank statements, checkbooks and cancelled checks, showing all of its actions and transactions in connection with or relating to or arising by reason of its claim, and submit persons in its employment and in its subcontractors'

employment for examination under oath by any person designated by the Fund to investigate any claims made against the Fund under the Contract, such examination to be made at the offices of the Contractor; and

- e. Proceed diligently, pending and subsequent to the determination of the Fund with respect to any such disputed matter, with the performance of the Contract and in accordance with all instructions of the Fund and the Consultant.

(2) The Contractor's failure to comply with any or all parts of subdivision b, c and d of paragraph (1) of this Section shall be deemed to be: (i) a conclusive and binding determination on its part that said order, work, action or omission does not involve extra work and is not contrary to the terms and provisions of the Contract; and (ii) a waiver by the Contractor of all claims for additional compensation or damages as a result of said order, work, action or omission. The provisions of subdivision b, c and d of paragraph (1) of this Section are for the purpose of enabling the Fund to avoid waste of public funds by affording it promptly the opportunity to cancel or revise any order, change its plans, mitigate or remedy the effects or circumstances giving rise to a claim or take such other action as may seem desirable and to verify any claimed expenses or circumstances as they occur. Compliance with such provisions is essential whether or not the Fund is aware of the circumstances of any order or other circumstances which might constitute a basis for a claim and whether or not the Fund has indicated it will consider a claim in connection therewith.

(3) The Contractor's failure to submit and maintain a Time Progress Schedule in accordance with Section 3.02 of the Agreement shall be deemed to be a waiver by the Contractor of all claims for additional time, compensation or damages as a result of any condition which is an alleged cause of delay in the completion of the work. The Schedule of Record, regularly updated and submitted at required durations in accordance with the provisions of the General Requirements, Section paragraph titled "Project Schedule": (i) informs the Fund and affords it promptly of regular opportunities to change its plans or mitigate or remedy the effects or circumstances giving rise to a claim of delay in the completion of the work or take such other action as may seem desirable to verify any claimed circumstances as they occur; and (ii) forms a record which becomes the basis of the Fund's verification of an alleged cause of delay in the completion of the work.

(4) No person has power to waive or modify any of the foregoing provisions and, in any action against the Fund to recover any sum in excess of the sum certified by the Fund to be due under or by reason of the Contract, the Contractor must allege in its complaint and prove at the trial compliance with the provisions of this Section.

(5) Nothing in this Section shall in any way affect the Fund's right to obtain an examination before trial or a discovery and inspection in any action that might be instituted by or against the Fund or the Contractor.

Section 2.04 Omitted Work

The Fund reserves the right at any time during the progress of the work to delete, modify or change the work covered by the Contract, by a Change Order or Field Order thereto providing for either a reduction or omission of any portion of the work, without constituting grounds for any claim by the Contractor for allowances for damages or for loss of anticipated profits and in such event a deduction shall be made from the Contract consideration, the amount of which is to be determined in accordance with the provisions of Section 4.02 or 4.05A of the Agreement.

Section 2.05 Extra Work

(1) The Fund reserves the right at any time during the progress of the work to add, modify or change the work covered by the Contract by Change Order or Field Order or as otherwise required by the Fund thereto providing for extra work of either a qualitative or quantitative nature and in such event the Contract consideration may be increased by an amount to be determined in accordance with the provisions of Sections 4.02 and 4.05A of the Agreement and the completion date for all or any part of the work may be extended for such period of time as may be determined by the Fund as necessary, because of the extra work, to complete the work or any part thereof.

(2) Nothing in the Contract Documents shall excuse the Contractor from proceeding with the extra work as directed. The terms and conditions of the Contract Documents shall be fully applicable to all extra work.

(3) The Contractor shall have no claim for extra work or an extension of time if the performance of such work, in the judgment of the Consultant, is made necessary or desirable because of any act or omission of the Contractor which is not in accordance with the Contract.

(4) Notwithstanding the provisions of Section 2.02 of the Agreement and any other provisions of the Contract Documents to the contrary, an officer of the Fund, after conferring with the Consultant, shall have the right to overrule a determination or decision of the Consultant, that relates to whether certain work is included in the Contract Documents or is extra work, which he or she believes is incorrect; in the event an officer exercises such right, his or her determination or decision shall be final, conclusive and binding upon the Contractor and the Fund unless the same shall be determined by a court of competent jurisdiction to have been fraudulent, capricious, arbitrary or so grossly erroneous as necessarily to imply bad faith.

Section 2.06 Contractor to Give Personal Attention

(1) The Contractor shall give its constant personal attention to all the work while it is in progress and shall place the work in charge of a competent and reliable full-time superintendent acceptable to the Consultant and the Fund who shall have authority to act for the Contractor and who shall be accountable to the Consultant to the extent provided in the Contract. Unless the superintendent proves to be unsatisfactory to the Contractor and ceases to be in its employ, such superintendent shall not be changed without the written permission of the Consultant and the Fund.

(2) When the Contractor and its superintendent are temporarily absent from the site of the work, the Contractor or its superintendent shall designate a responsible supervisory employee, approved by the Consultant and the Fund, to receive such orders as the Consultant or its representative may give. At no time shall any work be conducted on the site in the absence of an individual present who has been so designated by the Contractor or its superintendent as having authority to receive and execute instructions given by the Consultant or its representative.

(3) If the superintendent, project manager or other supervisory employees are not satisfactory to the Fund, the Contractor shall, if directed by the Fund, immediately replace such supervisory employees with other supervisory employees acceptable to the Consultant and the Fund. Such replacement and all related impacts shall be at no additional cost to the Fund.

[Instructions: See Amendments for the applicability of this section.]

(4) In addition to the superintendent required by 2.06(1) and (2), provide a full-time Project Manager who has ten (10) years' experience as a Project

Manager with experience on three (3) other projects of similar size and scope. "Full-time" in the previous sentence is defined as being on the site of the work at any time work is being performed unless an absence is approved by the Consultant and the Fund. The Project Manager shall provide constant personal attention in managing the prosecution of all the work while it is in progress and shall respond to concerns expressed by the Consultant and the Fund in a responsible and reliable manner. The Project Manager shall not be obligated to perform any other work that is likely to impair his/her attention to the prosecution and completion of the work of this Contract. The Project Manager shall be acceptable to the Consultant and the Fund and shall not be replaced without written permission of the Consultant and the Fund unless the Project Manager proves to be unsatisfactory to the Contractor or ceases to be in its employ. The value of the Project Manager in the Contract Breakdown required in Section 4.08 of Article IV shall be fixed at \$10,000 for each month, or portion thereof, prior to the substantial completion date specified on page A-1 of the Agreement.

Section 2.07 Employment of Workers

The Contractor shall at all times employ competent and suitable workers and equipment which shall be sufficient to prosecute all the work to full completion in a disciplined orderly manner and in accordance with the Time Progress Schedule and the contractually required time of performance. All workers engaged in special or skilled work shall have had sufficient experience in such work to properly and satisfactorily perform the same. Should the Consultant deem any employee of the Contractor or any subcontractor incompetent, careless, insubordinate or otherwise objectionable or whose continued employment on the work is deemed by the Consultant to be contrary to the public interest, it shall so advise the Contractor and the latter shall dismiss or shall cause the subcontractor, if such employee is employed by the latter, to dismiss such employee and such employee shall not again be employed on the work to be performed under the Contract without obtaining the prior written approval of the Consultant.

Section 2.08 Detailed Drawings and Instructions

Upon timely notice from the Contractor that supplementary information is required, the Consultant shall furnish additional instructions, by means of Drawings or otherwise, necessary for the proper execution of the work. All such Drawings and instructions shall be consistent with the Contract

Documents, true developments thereof and reasonably inferable therefrom. The work shall be executed in conformity therewith and the Contractor shall do no work without proper Drawings and/or instructions.

Section 2.09 Contract Documents to Be Kept at Site

The Contractor shall keep at the site of the work a copy of the Drawings and Specifications and shall at all times give the Consultant and the Fund access thereto.

Section 2.10 Permits and Building Codes

The Contractor shall obtain from the proper authorities all permits legally required to carry on its work, pay any and all taxes and fees legally required and shall be responsible for conducting its operations in accordance with the provisions of such permits. Except as otherwise expressly provided in the Contract Documents, all of the work covered by this Contract which is to be performed on property owned by the State University of New York is not subject to the building code of any city, county or other political subdivision of the State of New York. It is, however, subject to the provisions of the Building Code of New York State and the applicable Federal and State health and labor laws and regulations.

Section 2.11 Surveys

(1) From the data shown on the Drawings and identified at the site by the Consultant, a licensed surveyor, to be designated and paid for by the Fund, shall establish one (1) fixed benchmark and one (1) fixed base line at the site. The Contractor shall work from the benchmarks and base lines shown on the Drawings, identified at the site by the Consultant and established at the site by the aforesaid surveyor and shall establish such supplementary bench marks and base lines that are required in order for it to lay out the work. 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 Consultant to meet changed conditions or as a result of modifications to the work covered by the Contract.

(2) The Contractor shall furnish at its own expense such stakes and other required equipment, tools and materials, and all labor as may be required in laying out any part of the work. If, for any reason,

monuments are disturbed, it shall be the responsibility of the Contractor to reestablish them, without cost to the Fund, as directed by the Consultant. The Consultant 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.

(3) In all multiple-story construction, the Contractor shall establish and maintain line marks at each floor level and grade marks four (4) feet above the finished floor at each floor level.

Section 2.12 Site Conditions

(1) The Contractor acknowledges that it has assumed the risk and that the Contract consideration includes such provision as it deems proper for all physical conditions and subsurface conditions as it could reasonably anticipate encountering from the provisions of the Contract Documents, borings, rock cores, topographical maps and such other information as the Fund or the Consultant made available to it prior to the Fund's receipt of bids or from its own inspection and examination of the site prior to the Fund's receipt of bids.

(2) In the event that the Contractor encounters subsurface physical conditions or other latent physical conditions at the site differing substantially from those shown on or described or indicated in the Contract Documents and which could not have been reasonably anticipated from the aforesaid information made available by the Fund or the Consultant or from the Contractor's aforesaid inspection and examination of the site, it shall give immediate notice to the Consultant of such conditions before they are disturbed. The Consultant will thereupon promptly investigate the conditions and, if it finds that they do substantially differ from that which should have been reasonably anticipated by the Contractor, it shall make such changes in the Drawings and Specifications as may be necessary and a Change Order or Field Order may be issued, the amount of which shall be determined in accordance with the provisions of Sections 4.02 and 4.05A, to reflect any increase or decrease in the cost of, or the time required for, performance of the Contract as a result of any of the aforesaid changes made by the Consultant and/or as a result of such unanticipated subsurface conditions.

Section 2.13 Right to Change Location

When additional information regarding the subsurface conditions becomes available to the Fund as a result

of the excavation work, further testing or otherwise, it may be found desirable to change the location, alignment, dimensions or grades to conform to such conditions. The Fund reserves the right to make such reasonable changes in the work as, in its opinion, may be considered necessary or desirable; such changes and any adjustments in the Contract consideration as a result thereof are to be made in accordance with the provisions of Sections 2.04, 2.05 4.02 and 4.05A of the Agreement.

Section 2.14 Unforeseen Difficulties

Except as otherwise expressly provided in Section 2.12 of the Agreement and in other Sections of the Contract Documents, the Contractor acknowledges that it has assumed the risk and that the Contract consideration includes such provisions as it deems proper for any unforeseeable obstacles or difficulties which it may encounter in the performance of the work.

Section 2.15 Moving Materials and Equipment

Should it become necessary, in the judgment of the Consultant, at any time during the course of the work to move materials which are stored on the site and equipment which has been temporarily placed thereon, the Contractor upon request of the Consultant shall move them or cause them to be moved at its sole cost and expense; provided, however, if materials and equipment that have been stored or placed by the Contractor at a location on the site expressly approved, in writing, by the Consultant and the same are moved or caused to be moved by the Contractor at the Consultant's request, such removal shall be deemed extra work and the Contractor shall be compensated therefor in accordance with the provisions of Sections 4.02 and 4.05A of the Agreement.

Section 2.16 Other Contracts

(1) Prior to and during the progress of the work hereunder the Fund reserves the right to let or permit the letting of other contracts relating to the Project or in connection with work on sites within the Contract limit lines or adjoining or adjacent to that on which the work covered by this Contract is to be performed. In the event such other contracts are let, or have previously been let, the Contractor and such other contractors shall coordinate their work with each other, arrange the sequence of their work to conform with the progressive operation of all the work covered by such contracts and afford each other reasonable opportunities for the introduction and storage of their materials, supplies and equipment and the execution

of their work. If the Contractor or such other contractors contend that their work or the progress thereof is being interfered with by the acts or omissions of the other or others or that there is a failure to coordinate or properly arrange the sequence of the work on the part of the Contractor or such other contractors, they shall, within five (5) working days of the commencement of such interference or failure of coordination or failure to perform work in proper sequence, give written notification to the Fund and the Consultant of such contention. Upon receipt of such notification or on its own initiative, the Consultant shall investigate the situation and issue such instructions to the Contractor or such other contractors with respect thereto as it may deem proper. The Consultant shall determine the rights of the Contractor and of such other contractors and the sequence of work necessary to expedite the completion of all work covered by this Contract in relation to the work covered by said other contracts.

(2) The Contractor agrees that it has and will make no claim for damages against the Fund by reason of any act or omission to act by any other contractor or in connection with the Consultant's or Fund's acts or omissions to act in connection with such other contractor, but the Contractor shall have a right to recover such damages from the other contractors.

(3) Not Used.

(4) If the proper and accurate performance of the work covered by the Contract depends upon the proper performance and execution of work not included herein or depends upon the work of any other contractor, the Contractor shall inspect and promptly report to the Consultant any defects in such work that render it unsuitable for proper execution and results. Its failure to so inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the reception of the work covered by the Contract, except as to latent defects which may be discovered thereafter.

Section 2.17 Inspection and Testing

(1) All materials and workmanship shall be subject to inspection, examination and testing by the Consultant and the Fund at all times during the performance of the work and at all places where the work is carried on. Except as otherwise herein specified, the Fund shall pay for the cost of inspection, examination and testing by the Consultant or the Fund. If, however, the tests prove that the materials and/or work tested do not meet the requirements of the Contract, then the entire cost of such tests and any additional testing and or inspections required until the

work is deemed compliant is to be borne by the Contractor. The Consultant will have the right to reject defective material and workmanship furnished by the Contractor or require its correction. The Contractor, without charge therefor, shall satisfactorily and promptly correct all rejected work and replace all rejected material with proper material.

(2) The Contractor shall promptly segregate and remove from the site of the work all rejected material and work. If the Contractor shall fail to proceed at once with the replacing of rejected material and/or correction of defective workmanship, the Fund may, by contract or otherwise, replace such material and/or correct such workmanship, and charge the costs thereof to the Contractor or it may cancel the Contract and terminate the Contractor's employment as provided in the Agreement.

(3) The Contractor, without additional charge, shall promptly furnish all reasonable facilities, labor materials and equipment with associated operators necessary for the safe and convenient access, inspection and testing that may be required by the Consultant or the Fund.

(4) If the Contract Documents or the Consultant's instructions or the applicable laws, ordinances or regulations of any governmental authority require any part of the work covered by the Contract to be specially tested or inspected, the Contractor shall give the Consultant timely notice of its readiness for such testing or inspection or, if the same is to be performed by a governmental authority, of the date fixed therefor. If any such work, without the written permission of the Consultant, should be covered up prior to such testing or inspection, the Contractor, at its sole cost and expense must, if directed by the Consultant, uncover the same for testing or inspection and reconstruct same after the tests or inspection are conducted. All certificates of inspection or testing, involving the Contractor's work, required to be obtained from governmental authorities are to be secured by the Contractor at its sole cost and expense.

(5) Should it be considered necessary or advisable by the Consultant at any time before final acceptance of the entire work to make an examination of work already completed by removing or tearing out same, the Contractor, upon request, shall furnish all necessary facilities, labor and material to perform such examination. If the work subject to such examination is found to be defective or nonconforming in any manner due to the fault of the Contractor or any of its subcontractors, such uncovering or destruction and necessary reconstruction, even though such includes

work not covered in the Contract, shall be at the expense of the Contractor. If, however, such work after testing and examination is found to be satisfactory, the Fund will pay the Contractor the cost of such uncovering or destruction and reconstruction, such cost to be determined as in the case of extra work as provided in Sections 4.02 and 4.05A.

(6) Inspection of material and furnished articles to be incorporated in the work may be made at the place of production, manufacture or shipment unless otherwise stated herein. The inspection of material and workmanship for final acceptance as a whole or in part will be made at the site of the work.

Section 2.18 Subcontractors

(1) Except for subcontractors designated by the Fund, or required to be named at any earlier date, pursuant to the provisions of the Information for Bidders, within thirty (30) calendar days after receipt of the Notice to Proceed, the Contractor must submit a written statement to the Consultant giving the name and address of all proposed subcontractors. Said statement must contain a description of the portion of the work and materials which the proposed subcontractors are to perform and furnish and any other information tending to prove that the proposed subcontractors have the necessary facilities, skill, integrity, past experience and financial resources to perform the work in accordance with the terms and provisions of the Contract Documents.

(2) If the Consultant finds that the proposed subcontractors are qualified, it will so notify the Contractor within ten (10) working days after receipt of the aforesaid information. If the determination is to the contrary, however, the Consultant within such period will notify the Contractor of such determination and the latter, unless it decides to do such work itself and is qualified, in the Consultant's opinion, to do such work, must, within ten (10) working days thereafter, submit similar information with respect to other proposed subcontractors.

(3) The Consultant's approval of a subcontractor and/or the Fund's designation of a subcontractor pursuant to the provisions of the Contract Documents shall not relieve the Contractor of any of its responsibilities, duties and liabilities hereunder. The Contractor shall be solely responsible to the Fund for the acts or defaults of such subcontractors and of such subcontractors' officers, agents and employees, each of whom shall, for this purpose, be deemed to be the agent or employee of the Contractor to the extent of its subcontract.

(4) The Contractor shall be fully responsible for the administration, integration, coordination, direction and supervision of all of its subcontractors and of all work and it shall check all space requirements of the work and coordinate and adjust the same so that conflicts in space do not occur in the work being performed by it with its own employees and with the work being performed by its subcontractors and so that all equipment, piping, wiring, etc., can be installed, where possible, in the spaces allowed for same.

(5) No subcontractor shall be permitted to work at the site until: (a) it has furnished satisfactory evidence to the Consultant of the insurance required by law; (b) in the case of a Project involving a federal grant, it has furnished satisfactory evidence to the Consultant of the same type and amount of liability insurance as that required of the Contractor by Section 5.06 of the Agreement; and (c) except for subcontractors designated by the Fund pursuant to the provisions of the Information for Bidders, it has been approved by the Consultant.

(6) Within ten (10) working days after the Contractor receives payment from the Fund on account of a progress payment application for the percentage of the work done, it shall pay each of its subcontractors the sum contained in said payment for the percentage of said subcontractor's work, less the same amount retained therefrom by the Fund under the terms of the Contract Documents or in consequence of any legal proceedings or statutory liens, and less any amounts due the Contractor under the subcontract for work not performed or not properly or timely performed by the subcontractor. In the event any subcontractor is not paid by the Contractor, the former should immediately notify the Fund of such fact.

(7) The Contractor shall execute with each of its subcontractors and shall require all subcontractors to execute with their sub-subcontractors a written agreement which shall bind the latter to the terms and provisions of this Contract insofar as such terms and provisions are applicable to the work to be performed by such subcontractors. The Contractor shall require all subcontractors and sub-subcontractors to promptly, upon request, file with the Consultant and the Fund a conformed copy of such agreements, from which the price and terms of payment may be deleted.

(8) If for sufficient reason, at any time during the progress of the work to be performed hereunder, the Consultant determines that any subcontractor or sub-subcontractor is incompetent, careless, or uncooperative, the Consultant will notify the Contractor accordingly and immediate steps will be

taken by the Contractor for cancellation of such subcontract or sub-subcontract. Such termination, however, shall not give rise to any claim by the Contractor or by such subcontractor or sub-subcontractor for loss of prospective profits on work unperformed and/or work unfurnished and a provision to that effect shall be contained in all subcontracts and sub-subcontracts.

(9) No provisions of this Contract shall create or be construed as creating any contractual relation between the Fund and any subcontractor or sub-subcontractor or with any person, firm or corporation employed by, contracted with or whose services are utilized by the Contractor.

Section 2.19 Shop Drawings and Samples

(1) The Contractor in accordance with the approved Shop Drawing, Submittal, Mockup, and Sample schedules and with such promptness and in such sequence as to cause no delay in the work, shall submit for the Consultant's approval all Shop Drawings and Samples called for under the Contract or requested by the Consultant.

(2) Shop Drawings and mock-ups shall establish the actual detail of the work, indicate proper relation to adjoining work, amplify design details of mechanical and electrical equipment in proper relation to physical spaces in the structure, and incorporate minor changes of design or construction to suit actual conditions. Shop drawings include drawings, diagrams, schedules, product data and other information or materials specially prepared for the work by the Contractor to illustrate some portion of the work. Product data include standard illustrations, schedules, performance charts, instructions, brochures, diagrams and other information identified by the Contractor to illustrate materials or equipment for some portion of the work.

(3) All Shop Drawings, mock-ups and samples shall be thoroughly checked by the Contractor for compliance with the Contract Documents before submitting them to the Consultant for approval and all Shop Drawings shall bear the Contractor's recommendation for approval. Any Shop Drawings submitted without this stamp of approval and certification, and Shop Drawings which, in the Consultant's opinion, are incomplete, contain numerous errors or have not been checked or only checked superficially, will be returned unchecked by the Consultant for resubmission by the Contractor. In checking Shop Drawings, the Contractor shall verify all dimensions and field conditions and shall check and

coordinate the Shop Drawings of any section or trade with the requirements of all other sections or trades whose work is related thereto, as required for proper and complete installation and sequence of the work.

(4) Samples must be of sufficient size or number to show the quality, type, range of color, finish and texture of the material. Each Sample shall be properly labeled to show the nature of the material, trade name of manufacturer, name and location of the work where the material represented by the Sample is to be used and the name of the Contractor submitting the Sample. Transportation charges to the Consultant must be prepaid on Samples forwarded to it.

(5) At the start of the Project, the format for submittals shall be established by the Fund. If an electronic method is selected for the submission and approval of submittals, the Contractor shall provide submittals in a PDF format and the Consultant will return the submittals in electronic format to the Contractor. For both hard-copy and electronic submittal formats, all submittals that require physical samples or mock-ups shall be provided in accordance with the requirements set forth in the Contract Specifications. Shop Drawings and Samples, submitted by the Contractor in accordance with the approved Shop Drawing and Sample schedule that is included in the Time Progress Schedule, will be reviewed by the Consultant within fifteen (15) working days and if satisfactory will be approved. A Shop Drawing, when approved, will be returned to the Contractor. If not satisfactory, the Drawings and Samples will be appropriately marked and returned to the Contractor for correction thereof, in which event the Contractor shall resubmit to the Consultant a corrected copy of the Shop Drawing or a new Sample, as the case may be. The Contractor shall make any correction required by the Consultant and shall appropriately note any changes or revisions on the Shop Drawing, dated to correspond with the date of the Consultant's request for the change. Upon approval of the Shop Drawing by the Consultant, the Contractor shall promptly furnish to the Consultant as many copies thereof as the Consultant may reasonably request. Should more than two (2) separate reviews of any required shop drawings or samples submitted be necessary, in the judgement of the Consultant and the Fund, the Contractor shall be responsible for the reasonable costs incurred by the Fund for such additional reviews by the Consultant.

(6) At the time of submission of a Shop Drawing or Sample, the Contractor shall inform the Consultant and the Fund in writing of any deviation in the Shop Drawing or Sample from the requirements of the

Contract Documents. Unless such deviation is specifically noted by the Contractor with a notation that such deviation will result in extra work for which the Contractor requests payment, the Contractor shall be deemed to have waived any claim for extra work, additional compensation or payment or an extension of time with respect to all work shown on, described in or related to the Shop Drawing or Sample.

(7) The Consultant's approval of Shop Drawings or Samples is for design only and is not a complete check on the method of assembly, erection or construction. Approval shall in no way be construed as: (a) permitting any departure whatsoever from the Contract Documents, except where the Contractor, in accordance with the provisions of paragraph 6 of this Section, has previously notified the Fund and the Consultant of such departure; (b) relieving the Contractor of full responsibility for any error in quality of materials, details, dimensions, omissions or otherwise that may exist; (c) relieving the Contractor of full responsibility for adequate field connections, erection techniques, bracing or deficiencies in strength; (d) relieving the Contractor of full responsibility for satisfactory performance of all work and coordination with the work of all subcontractors and other contractors; or (e) permitting departure from additional details or instructions previously furnished by the Consultant.

(8) No work requiring a Shop Drawing or Sample shall be commenced until a Shop Drawing or Sample is approved by the Consultant and all such work shall be: (a) in accordance with the approved Shop Drawing, provided the latter conforms in all respects to the Contract Documents or to such deviations therefrom as have been previously noted by the Contractor in accordance with the provisions of paragraph 6 of this Section; and (b) in conformance in all respects to the sample furnished to and approved by the Consultant and, unless otherwise specified, as new and of good quality.

(9) The Contractor may be required to provide professional services that constitute the practice of architecture or engineering when specifically required by the Contract Documents for a portion of the work or the Contractor needs to provide such services in order to carry out its responsibilities for construction means, methods, techniques, sequences and procedures. When professional services are required in the Contract Documents, the Consultant will specify all performance and design criteria that such services must satisfy. The Fund and Consultant shall be entitled to rely on the adequacy, accuracy and completeness of the professional services,

certifications, and approvals performed or provided by design professionals working for the Contractor.

(10) Contractor agrees that the Fund may deduct from any application for payment made by the Contractor, any and all Design Professional, Consultant and/or Construction Management fees and costs incurred by the Fund together with a markup upon such hard costs in the amount of 15% in the review or evaluation of any substitutions for methods, products or performance pursuant to this Section 2.19.

Section 2.20 Equivalents - Approved Equal

(1) Equivalents or Approvals - General

a. The words "similar and equal to", or equal", "equivalent" and such other words of similar content and meaning shall for the purposes of this Contract be deemed to mean similar and equivalent to one of the named products. For the purposes of subdivisions (1) and (2) of this Section and for the purposes of the Bidding Documents, the word "products" shall be deemed to include the words "articles", "materials", "items", "equipment" and "methods". Whenever in the Contract Documents one or more products are specified, the words "similar and equal to" shall be deemed inserted.

b. Whenever any product is specified in the Contract Documents by a reference to the name, trade name, make or catalog number of any manufacturer or supplier, the intent is not to limit competition, but to establish a standard of quality which the Consultant has determined is necessary for the Project. A Contractor may at its option use any product other than that specified in the Contract Documents provided the same is approved by the Consultant in accordance with the procedures set forth in subdivision (2) of this Section except for the single/sole source shown in Specification Sections where the use of another product is not permitted. In all cases the Consultant shall be the sole judge as to whether a proposed product is to be approved and the Contractor shall have the burden of proving, at its own cost and expense, to the satisfaction of the Consultant, that the proposed product is similar and equal to the named product. In making such determination the Consultant may establish such objective and appearance criteria as it may deem proper that the proposed product must meet in order for it to be approved.

- c. Nothing in the Contract Documents shall be construed as representing, expressly or implied, that the named product is available or that there is or there is not a product similar and equal to any of the named products and the Contractor shall have and make no claim by reason of the availability or lack of availability of the named product or of a product similar and equal to any named product.
- d. The Contractor shall have and make no claim for an extension of time or for damages by reason of the time taken by the Consultant in considering a product proposed by the Contractor or by reason of the failure of the Consultant to approve a product proposed by the Contractor.
- e. Requests for approval of proposed equivalents will be received by the Consultant only from the Contractor.
- f. Approval shall in no way be construed as: (a) permitting any departure whatsoever from the Contract Documents, (b) relieving the Contractor of full responsibility for any error in quality of materials, details, dimensions, sequence of work, omissions or otherwise that may exist, (c) relieving the Contractor of full responsibility for adequate field connections, erection techniques, bracing or deficiencies in strength, (d) relieving the Contractor of full responsibility for satisfactory performance of all work to achieve a functionally complete facility or result and coordination with the work of all subcontractors and other contractors or (e) permitting departure from additional details or instructions previously furnished by the Consultant.
- g. Contractor agrees that the Contractor approves and authorizes the deduction from Contractor's applications for payment any and all costs incurred by the Construction Manager, Consultant, Design Professional or otherwise in evaluating Contractor's submissions under this Section 2.20, together with a markup upon such hard costs in the amount of 15%.

(2) Equivalents or Approvals After Bidding

- a. Any and all submissions for "or equal" products which are submitted by the Contractor after award of the Contract must be made by the Contractor within ninety (90) calendar days after the date of award. Contractor agrees that it waives and relinquishes the right, claim or privilege, if

any, to submit "or equal" proposals if such are made ninety (90) calendar days after the date of award of the Contract to the Contractor.

- b. Requests for approval of proposed equivalents will be considered by the Consultant after bidding only in the following cases: (a) the named product cannot be obtained by the Contractor because of strikes, lockouts, bankruptcies or discontinuance of manufacture and the Contractor makes a written request to the Consultant for consideration of the proposed equivalent within ten (10) calendar days of the date it ascertains it cannot obtain the named product; or (b) the proposed equivalent is superior, in the opinion of the Consultant, to the named product; or (c) the proposed equivalent, in the opinion of the Consultant, is equal to the named product and its use is to the advantage of the Fund, e.g., the Fund receives an equitable credit, acceptable to it, as a result of the estimated cost savings to the Contractor from the use of the proposed equivalent or the Fund determines that the Contractor has not failed to act diligently in placing the necessary purchase orders and a savings in the time required for the completion of the construction of the Project should result from the use of the proposed equivalent.
- c. Where the Consultant pursuant to the provisions of this subdivision approves a product proposed by a Contractor and such proposed product requires a revision or redesign of any part of the work covered by this Contract, all such revision and redesign and all new Drawings and details required therefor shall be subject to the approval of the Consultant and shall be provided by the Contractor at its own cost and expense.
- d. Where the Consultant pursuant to the provisions of this Section approves a product proposed by a Contractor and such proposed product requires a different quantity and/or arrangement of duct work, piping, wiring, conduit or any other part of the work from that specified, detailed or indicated in the Contract Documents, the Contractor shall provide the same at its own cost and expense.

- (3) Contractor agrees that the Fund may deduct from any application for payment made by the Contractor any and all Design Professional, Consultant and/or Construction Management fees and costs incurred by the Fund, together with a markup upon such hard costs in the amount of 15%, in the consideration or evaluation of any substitutions for methods, products or performance pursuant to this Section 2.20.

Section 2.21 Patents, Trademarks and Copyrights

The Contractor acknowledges that the Contract consideration includes all royalties, license fees and costs arising from patents or trademarks in any way involved in the work; provided, however, that the Contract consideration shall not be deemed to have included therein any royalty, license fee or cost arising from a patent or trademark for a design prepared by the Consultant and the Contractor shall have no liability in connection therewith. Where the Contractor is required or desires to use any product, device, material or process covered by patent or trademark, the Contractor shall indemnify and save harmless the Fund from any and all claims, actions, causes of action or demands, for infringement by reason of the use of such patented product, device, material or process, and shall indemnify the Fund from any cost, liability, damage and expense, including reasonable attorneys' fees and court costs, which it may be obligated to incur or pay by reason of any claim or infringement at any time both before or after the Fund's final acceptance of all the work to be performed under the Contract.

Section 2.22 Possession Prior to Completion

If before the final completion of all the work it shall be deemed advisable or necessary by the Fund to take over, use, occupy or operate any part of the completed or partly completed work or to place or install therein equipment and furnishings, the Fund, upon reasonable written notice to the Contractor, shall have the right to so do and the Contractor will not in any way interfere therewith or object to the same. Such action by the Fund shall in no way affect the obligations of the Contractor under the terms and provisions of the Contract Documents and the Contractor acknowledges that such action by the Fund does not in any way evidence the completion of the work or any part thereof or in any way signify the Fund's acceptance of the work or any part thereof. The Contractor agrees to continue the performance of all work covered by the Contract in a manner which will not unreasonably interfere with such takeover, use, occupancy, operation, placement or installation.

Section 2.23 Completion and Acceptance

(1) Partial Completion

If before the final completion of all the work any portion of the permanent construction has been satisfactorily completed and the same will be immediately useful to the Fund, the latter may, by written notice, advise the Contractor that it accepts such portion of the work. Such action by the Fund shall in no way affect the obligations of the Contractor under the terms and provisions of the Contract with respect to any work not so completed and accepted. The partial completion of any portion of the Contractor's work by the Fund, the Campus or the Consultant, shall not impact the assessment of liquidated damages or actual costs for delays or disruption to the Project caused by the Contractor, its subcontractors or vendors.

(2) Substantial Completion

When all the Work covered by the Contract is substantially completed, as defined in Section 1.01, the Contractor shall give written notice thereof to the Fund and the Consultant. The latter will then promptly make an inspection of the work and, if they shall determine that all the work is substantially completed, they shall so advise the Contractor. Such action shall in no way affect the obligations of the Contractor under the terms and provisions of the Contract with respect to any uncompleted (including untested or deferred work), unaccepted or corrective work or in any way affect, limit or preclude the issuance by the Consultant, from time to time thereafter, of "Punch Lists", i.e., lists of uncompleted or corrective work which the Contractor is to promptly complete and/or correct. In the judgement of the Fund, should more than two (2) separate inspections of the Work be necessary, the Contractor agrees that the Fund may deduct from any application for payment made by the Contractor, any and all Design Professional, Consultant and/or Construction Management fees and costs incurred by the Fund together with a markup upon such hard costs in the amount of 15% for all such additional inspections.

The Contractor must fully, completely and acceptably perform all Punch List work and any other work subsequently discovered remaining to be completed or corrected, within ninety (90) calendar days of Substantial Completion or within such other timeframe stipulated by the Fund or Consultant. Failure to complete the Punch List within the time so designated hereunder may be deemed default on the part of the Contractor.

(3) Final Completion and Acceptance

After the completion of all the work the Contractor shall give written notice to the Fund and the Consultant that all the work is ready for inspection and final acceptance. The Fund and the Consultant shall promptly make such inspection and, if they shall determine that all the work has been satisfactorily completed, the Fund shall thereupon by written notice advise the Contractor that it accepts such work. In the judgement of the Fund, should more than two (2) separate inspections of the Work be necessary, the Contractor agrees that the Fund may deduct from any application for payment made by the Contractor, any and all Design Professional, Consultant and/or Construction Management fees and costs incurred by the Fund together with a markup upon such hard costs in the amount of 15% for all such additional inspections.

Section 2.24 Record Drawings

(1) At the start of the Project, the format for Record Drawings shall be established by the Fund. Prior to acceptance by the Fund of all work covered by the Contract, the Contractor shall furnish to the Consultant one (1) set of current Contract Drawings on which the Contractor has recorded, using colored pencil for hard copy format or electronic editing tool in contrasting color for electronic format, in a neat and workmanlike manner, all instances where actual field construction differs from work as indicated on the Contract Drawings. These "Record" Drawings shall show the following information: (a) all significant changes in plans, sections, elevations and details, such as shifts in location of walls, doors, windows, stairs and the like made during construction; (b) all significant changes in foundations, columns, beams, openings, concrete reinforcing, lintels, concealed anchorages and "knock-out" panels made during construction; (c) final location of electric panels, final arrangement of electric circuits and any significant changes made in electrical design as a result of Change Orders, Field Orders or job conditions; (d) final location and arrangement of all mechanical equipment and major concealed plumbing, including, but not limited to, supply and circulating mains, vent stacks, sanitary and storm water drainage; (e) final location and arrangement of all underground utilities, connections to building and/or rerouting of existing utilities, including, but not limited to, sanitary, storm, heating, electric, signal, gas, water and telephone; and (f) final make and model for all significant equipment and devices listed in the specifications. The Contractor shall also provide an electronic version as determined by the Consultant.

(2) Periodically during the work, the Consultant may request submission of a progress set of Record Drawings for review and advise the Contractor of errors or omissions, if any, that must be corrected or completed prior to final submission of the Record Drawings. Shop Drawings shall not be acceptable as Record Drawings.

(3) The Contractor shall submit the Record Drawings to the Consultant at least fifteen (15) days prior to the date of Substantial Completion. The Consultant will then review the Record Drawings and, if they shall determine that the Record Drawings represent the actual field construction being completed, they shall so advise the Contractor. If not satisfactory, the Record Drawings will be appropriately marked and returned to the Contractor for correction thereof, in which event the Contractor shall promptly correct and resubmit to the Consultant a corrected copy of the Record Drawings. Acceptance of the Record Drawings by the Fund is a condition precedent to the Contractor's entitlement to receive Final Payment.

Section 2.25 Guarantees

(1) The Contractor, at the convenience of the Fund, shall remove, replace and/or repair at its own cost and expense any defects in workmanship, materials, ratings, capacities or characteristics occurring in or to the work covered by the Contract within one (1) year or within such longer period as may otherwise be provided in the Contract, the period of such guarantee to commence with the Fund's final acceptance of all work covered under the Contract or at such other date or dates as the Fund may specify prior to that time, and the Contractor, upon demand, shall pay for all damage to all other work resulting from such defects and all expenses necessary to remove, replace and/or repair such other work which may be damaged in removing, replacing or repairing the said defects. The obligations of the Contractor under the provisions of this paragraph or any other guarantee provisions of the Contract Documents are not limited to the monies retained by the Fund under the Contract.

(2) Unless such removal, replacement and/or repair shall be performed by the Contractor within ten (10) working days after it receives written notice from the Fund specifying such defect, or if such defect is of such a nature that it cannot be completely removed, repaired and/or replaced within said ten (10) day period and the Contractor shall not have diligently commenced removing, repairing and/or replacing such defect within said ten (10) day period and shall not thereafter with reasonable diligence and in good

faith proceed to do such work, the Fund may employ such other person, firm or corporation as it may choose to perform such removal, replacement and/or repair and the Contractor agrees, upon demand, to pay to the Fund all amounts which it expends for such work.

Section 2.26 Default of Contractor

(1) In addition to those instances specifically referred to in other Sections hereof, the Fund shall have the right to declare the Contractor in default of the whole or any part of the work if:

- a. The Contractor becomes insolvent; or if
- b. The Contractor makes an assignment for the benefit of creditors pursuant to the statutes of the State of New York; or if
- c. A voluntary or involuntary petition in bankruptcy is filed by or against the Contractor; or if
- d. A receiver or receivers are appointed to take charge of the Contractor's property or affairs; or if
- e. The Contractor fails to commence work when notified to do so by the Consultant; or if
- f. The Contractor shall abandon the work; or if
- g. The Contractor shall refuse to proceed with the Work or extra Work when and as directed by the Consultant or Fund; or if
- h. The Contractor shall without just cause reduce its working force to a number which, if maintained, would be insufficient, in the opinion of the Fund, to complete the work in accordance with the approved time progress schedule, and shall fail or refuse to sufficiently increase such working force when ordered to do so by the Consultant; or if
- i. The Contractor shall sublet, assign, transfer convey, or otherwise dispose of the Contract other than as herein specified; or if
- j. The Fund shall be of the opinion that the Contractor is or has been unnecessarily or unreasonably or willfully delaying the performance and completion of the work, or the award of necessary subcontracts, or the placing of necessary material and equipment orders; or if
- k. The Fund shall be of the opinion that the work cannot be completed within the time herein

provided therefor or within the time to which such completion may have been extended; provided, however, that the impossibility of timely completion is, in the Fund's opinion, attributable to conditions within the Contractor's control; or if

- l. The work is not completed within the time herein provided therefor or within the time to which the Contractor may be entitled to have such completion extended; or if
- m. The Fund shall be of the opinion that the Contractor is or has been willfully or in bad faith violating any of the provisions of this Contract;
- n. The Fund shall be of the opinion that the Contractor is not or has not been executing the Contract in good faith and in accordance with its terms; or if
- o. At any time during the period of the Agreement, insurance as required is not in effect or proof thereof is not provided to the Fund.

(2) Before the Fund shall exercise its right to declare the Contractor in default by reason of the conditions set forth in the above items *a, b, c, d, e, f, g, h, j, k, l, m, n* and *o*, it shall give the Contractor three (3) working days' notice of its intention to declare the Contractor in default and unless, within such three (3) day period, the Contractor shall make arrangements, satisfactory to the Fund, to correct and/or eliminate the conditions set forth in the Fund's aforesaid notice, the Contractor may be declared in default at the expiration of such three (3) day period or at the expiration of such longer period of time as the Fund may determine.

(3) The right to declare in default for any of the grounds specified or referred to shall be exercised by the Fund sending the Contractor a written notice setting forth the ground or grounds upon which such default is declared. Upon receipt of notice that it has been declared in default, the Contractor shall immediately discontinue all further operations under the Contract and shall immediately quit the site, leaving untouched all plant, materials, equipment, tools and supplies then on site.

(4) The Fund, after declaring the Contractor in default, may then have the work completed by such means and in such manner, by contract, with or without public letting, or otherwise, as it may deem advisable, utilizing for such purpose such of the Contractor's plant, materials, equipment, tools and supplies remaining on the site, and also such subcontractors as it may deem advisable, or it may call

upon the Contractor's surety at its own expense to do so.

(5) In the event that the Fund declared the Contractor in default of the work or any part of the work, the Contractor, in addition to any other liability to the Fund hereunder or otherwise provided for or allowed by law, shall be liable to the Fund for any costs it incurs for additional architectural and engineering services necessary, in its opinion, because of the default and the total amount of liquidated damages from the date when the work should have been completed by the Contractor in accordance with the terms hereof to the date of actual completion of the work, both of which items shall be considered as expenses incurred by the Fund in completing the work and the amount of which may be charged against and deducted out of such monies as would have been payable to the Contractor or its surety if the work had been completed without a default.

(6) If the Fund completes the work, the Consultant shall issue a certificate stating the expenses incurred in such completion, including the cost of re-letting. Such certificate shall be final, binding and conclusive upon the Contractor, its surety, and any person claiming under or through the Contractor, as to the amount thereof.

(7) The expense of such completion, as so certified by the Consultant, shall be charged against and deducted out of such monies as would have been payable to the Contractor if it had completed the work; the balance of such monies, if any, subject to the other provisions of the Contract, to be paid to the Contractor without interest after such completion. Should the expense of such completion, so certified by the Consultant, exceed the total sum which would have been payable under the Contract if the same had been completed by the Contractor, any such excess shall be paid by the Contractor to the Fund upon demand.

(8) In the event the Fund shall determine to complete the work without calling upon the Contractor's surety to do so, the Contractor shall not be entitled, from and after the effective date of the declaration of the default, to receive any further payment under the Contract until the said work shall be wholly completed and accepted by the Fund.

(9) In case the Fund shall declare the Contractor in default as to a part of the work only, the Contractor shall discontinue such part, shall continue performing the remainder of the work in strict conformity with the terms of the Contract, and shall in no way hinder or interfere with any other contractors or persons whom

the Fund may engage to complete the work as to which the Contractor was declared in default.

(10) The provisions relating to declaring the Contractor in default as to the entire work shall be equally applicable to a declaration of partial default, except that the Fund shall be entitled to utilize for completion of the part of the work as to which the Contractor was declared in default only such plant, materials, equipment, tools and supplies as had been previously used by the Contractor on such part.

(11) In completing the whole or any part of the work, the Consultant and the Fund shall have the power to depart from, change or vary the terms and provisions of the Contract; provided, however, that such departure, change or variation is made for the purpose of reducing the time or expense of such completion. Such departure, change or variations, even to the extent of accepting a lesser or different performance, shall not affect the conclusiveness of the Consultant's certificate of the cost of completion, nor shall it constitute a defense to any action to recover the amount by which such certificate exceeds the amount which would have been payable to the Contractor hereunder but for its default.

(12) The provisions of this Section shall be in addition to any and all other legal or equitable remedies provided by this Agreement and otherwise applicable by law.

Section 2.27 Termination for Convenience

(1) The performance of work under this Contract may be terminated by the Fund, in whole or in part, whenever the Fund shall determine that such termination is in the best interest of the Fund. Any such termination shall be effected by a notice in writing to the Contractor specifying the date upon which such termination shall become effective and the extent to which performance of the Contract shall be terminated. Such termination shall be effective on the date and to the extent specified in said notice.

(2) Upon receipt of a notice of termination, and except as otherwise directed in writing by the Fund, the Contractor shall:

- a. Discontinue all work and the placing of all orders for materials and facilities otherwise required for the performance thereof,
- b. Cancel all existing orders and subcontracts to the extent such orders and subcontracts relate to the

performance of work terminated by the notice of termination;

- c. Take such action as may be necessary to secure to the Fund the benefits of any rights of the Contractor under orders or subcontracts which relate to the performance of work terminated by the notice of termination, including, but not limited to, the assignment to the Fund, in the manner and to the extent directed by the Fund, all the right, title and interest of the Contractor under the orders or subcontracts so terminated and cancelled. In the event of such assignment, the Fund shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination and cancellation of such orders and subcontracts;
- d. Transfer title and deliver to the Fund, in accordance with the direction of the Fund, all materials, supplies, work in process, facilities, equipment, machines or tools produced as a part of or acquired by the Contractor in connection with the work terminated by said notice, and all plans, Drawings, Working Drawings, sketches, Specifications and information for use in connection therewith; provided, however, that the Contractor may retain any of the foregoing if it so elects and foregoes reimbursement therefor;
- e. Take such action as may be necessary or as the Consultant or the Fund may prescribe for the protection and preservation of all property in the possession or control of the Contractor in which the Fund, under the provisions of the Contract, has or may acquire an interest.

(3) Notwithstanding the foregoing, should the notice of termination relate to only a portion of the work covered by the Contract, the Contractor will proceed with the completion of such portions of the work as are not terminated.

(4) The Fund will pay and the Contractor shall accept, in full consideration for the performance and completion of the portions of the work as are not terminated, a sum calculated by determining the percentage the portions of the work not terminated bear to the total amount of the work covered by the Contract, and by multiplying the Contract consideration by such percentage - the product thereof being the amount to be paid to the Contractor. The Fund shall determine the amount of such consideration in accordance with the foregoing.

(5) Upon compliance by the Contractor with the foregoing provisions of this Section and subject to

deductions for payments previously made, the Fund, for the portions of the work terminated, shall compensate the Contractor as follows:

- a. By reimbursing the Contractor for actual expenditures made with respect to such work, including expenditures made in connection with any portion thereof which may have been completed prior to termination, as well as expenditures made after termination in completing those portions of the work covered by the Contract which the Contractor may have been required by the notice of termination to complete. The Fund shall determine the allowability and amount of such expenditures.
- b. By reimbursing the Contractor for all actual expenditures made, with the prior written approval of the Fund or pursuant to a court judgment, in settling or discharging any outstanding contractual obligations or commitments incurred or entered into by the Contractor in good faith with respect to the Contract and resulting from the termination thereof.
- c. By reimbursing the Contractor for all actual expenditures made after the effective date of the notice of termination resulting from or caused by the Contractor taking necessary action or action prescribed by the Consultant or the Fund for the protection and preservation of all property in the possession or control of the Contractor in which the Fund, under the provisions of the Contract, has or may acquire an interest.
- d. By paying the Contractor a markup, which is to be calculated in the same manner as that provided for in subdivision c of paragraph (1) of Sections 4.02 and 4.05A for extra work, on the foregoing expenditures, which markup is to cover the Contractor's overhead and profit; provided, however, that if it appears that the Contractor would have sustained a loss on the entire Contract had it been completed, said markup shall be reduced by one-third.

(6) The sum of all amounts payable under this Section, plus the sum of all amounts previously paid by the Fund under the provisions of the Contract, shall not exceed the amount of the Contract consideration. In no event shall the Contractor be entitled to any payment for loss of anticipated profits on uncompleted work and the Fund shall not be liable for same.

(7) Termination by the Fund under the provisions of this Section shall be without prejudice to any claims

or rights which the Fund may have against the Contractor. The Fund may retain from the amount due to the Contractor under the provisions of this Section such monies as may be necessary to satisfy any claim which the Fund may have against the Contractor in connection with the Contract; provided, however, that the Fund's failure to retain such monies shall not be deemed a waiver of any of its rights or claims against the Contractor.

(8) Notwithstanding the foregoing, where the Contractor and the Consultant can agree upon another method of determining the amount of the consideration to be paid to the Contractor under the provisions of this Section, such method, subject to the approval of the Fund, may, at the option of the Fund, be substituted for the method set forth above.

Article III Time of Performance

Section 3.01 Commencement, Prosecution and Completion of Work

(1) The Contractor agrees that it will begin the work herein embraced upon receipt of the Notice to Proceed, unless the Fund consents, in writing, to begin at a different date, and that it will prosecute the same with such diligence that all work covered by the Contract shall be substantially completed and performed on or before the time specified on page A-1 of the Agreement.

(2) The Contractor further agrees that time is of the essence in this Contract and that all the Work shall be prosecuted in such manner and with sufficient plant and forces to complete all Work timely.

Section 3.02 Time Progress Schedule

(1) To show compliance with the requirements of Section 3.01 of the Agreement, provide and maintain a Time Progress Schedule in accordance with the General Requirements, Special Conditions, Section paragraph titled "Project Schedule". Unless otherwise accepted by the Fund, the Time Progress Schedule shall be strictly adhered to by the Contractor. The time for substantial completion shall be on or before the time specified on page A-1 of the Agreement.

(2) If through the fault of the Contractor or any subcontractor the Contractor shall fail to adhere to the time progress schedule, it must promptly adopt such other and additional means and methods of construction as will make up for the time lost and will assure completion in accordance with such schedule.

(3) The failure of the Contractor to submit a Time Progress Schedule, the Fund's or the Consultant's acceptance of the Contractor's time progress schedule or lack of such acceptance, the means and/or methods of construction employed by the Contractor, including any revisions thereof, and/or its failure to revise the same shall not relieve the Contractor of its obligation to accomplish the result required by the Contract in the time specified on page A-1 of the Agreement, nor shall the exercise of the Consultant's or the Fund's right to reject any portion of the work, create or give rise to any claim, action or cause of action, legal, equitable or otherwise, against the Consultant or the Fund.

(4) The failure of the Contractor to submit and maintain a Time Progress Schedule in accordance with the General Requirements shall be deemed to be a waiver by the Contractor of all claims for additional compensation or damages as a result of any condition which is an alleged cause of delay in the completion of the work.

Section 3.03 Time Progress Schedule for Shop Drawings and Samples

The Contractor shall include activities for preparation and submission of all Shop Drawings, mock-ups and Samples in the Time Progress Schedule in Section 3.02.

Section 3.04 Notice of Conditions Causing Delay

(1) Within ten (10) working days after the commencement of any condition which is causing or may cause delay in completion or require Contractor to request an extension of time, the Contractor must notify the Consultant and the Fund in writing of the effect, if any, of such condition upon the Time Progress Schedule, and must state why and in what respects, if any, the condition is causing or may cause such delay.

(2) Contractor agrees that an express condition precedent to Contractor's entitlement to any extension of time on the project shall be full and complete compliance to the satisfaction of the Fund with the Contractor's obligations in Section 3.06, Contractor's Progress Reports. Failure to submit proper Contractor's progress reports in appropriate and timely fashion shall be deemed a waiver and relinquishment of any right, claim or privilege to obtain an extension of time for the performance of the Contractor's work.

(3) Failure to strictly comply with this requirement may, in the discretion of the Fund, be deemed sufficient cause to deny any extension of time on account of delay in completion arising out of or resulting from any change, extra work, suspension, or other condition.

(4) Except as otherwise set forth in this Section 3.04 all procedures set forth in Sections 2.02 and 2.03 of this Agreement shall be complied with by the Contractor. Furthermore, full and complete compliance with the requirements of this Article III is a condition precedent to the Contractor's entitlement to receive an extension of time.

Section 3.05 Extension of Time

(1) Within ten (10) working days after the commencement of any condition which is causing or may cause the Contractor to incur, require or otherwise need an extension of time, the Contractor shall notify the Consultant and the Fund of such condition. Full and complete compliance with this paragraph 3.05(1) is a condition precedent to the Contractor obtaining an extension of time for performance of any portion or all of its work.

(2) An extension or extensions of time for the completion of the work may be granted by the Fund subject to the provisions of this Section, but only upon written application therefor by the Contractor to the Fund and the Consultant.

(3) An application for an extension of time must set forth in detail the source and the nature of each alleged cause of delay in the completion of the work, the date upon which each such cause of delay began and ended and the number of days of delay attributable to each of such causes. It must be submitted prior to completion of the work.

(4) If such an application is made, the Contractor may be entitled to an extension of time for delay in completion of the work caused solely: (a) by the acts or omissions of the Fund, its trustees, officers, agents or employees; or (b) by the acts or omissions of other contractors, not including subcontractors of the Contractor, on this Project; or (c) by unforeseeable supervening conditions entirely beyond the control of either party hereto (such as, but not limited to, acts of God or the public enemy, war or other national emergency making performance temporarily impossible or illegal, or strikes or labor disputes).

(5) The Contractor may, however, be entitled to an extension of time for such causes only for the

number of calendar days of delay which the Fund may determine to be due solely to such causes, and then only if the Contractor shall have strictly complied with all of the requirements of this Section and Section 3.04. The Fund shall make such determination within ninety (90) calendar days after receipt of the Contractor's application for an extension of time; provided, however, said application complies with the requirements of this Section.

(6) The Contractor shall not be entitled to receive a separate extension of time for each one of several causes of delay operating concurrently, but, if at all, only for the actual period of delay in completion of the work as determined by the Fund, irrespective of the number of causes contributing to produce such delay. If one of several causes of delay operating concurrently results from any act, fault or omission of the Contractor or of its subcontractors or material-men and would of itself (irrespective of the concurrent causes) have delayed the work, no extension of time will be allowed for the period of delay resulting from such an act, fault or omission.

(7) The granting of an application for an extension of time for causes of delay other than those herein referred to shall be entirely within the discretion of the Fund.

(8) If the Contractor shall claim to have sustained any damages by reason of delays, extraordinary or otherwise, or hindrances which it claims to be due to any action, omission, direction or order by the Fund or the Consultant, the Contractor shall be entitled only to an extension of time as hereinabove provided and shall not have or assert any claim or prosecute any suit, action, cause of action or proceeding against the Fund based upon such delays or hindrances, unless such delays or hindrances were caused by the Fund's bad faith or its willful, malicious, or grossly negligent conduct, or un contemplated delays, or delays so unreasonable that they constitute an intentional abandonment of the Contract by the Fund, or delays resulting from the Fund's breach of a fundamental obligation of the Contract.

(9) The Contractor shall not be entitled to an extension of time for the performance of any or all of the Work set forth in allowances to the Contract. All allowance work shall be performed in accordance with the Contractor's schedule.

Section 3.06 Contractor's Progress Reports

After commencement of the work the Contractor shall furnish the Consultant with written monthly reports

setting forth the condition and progress of the work, the percentage of each part of the work that has been finished, those parts of the work which have been completed within the scheduled time and those parts of the work which have not been finished within the scheduled time, and the general progress of the work that is being performed away from the site and the approximate date when such work will be finished and delivered to the site. Contractor agrees that compliance with this Section 3.06 is an express condition precedent to the Contractor's right, claim or entitlement to obtain an extension of time for the performance of the Contractor's work. Failure to comply with this Section 3.06 shall be a waiver and relinquishment of all such rights, claims and privileges to request or obtain an extension of time for the performance of Contractor's work.

Article IV Payment

Section 4.01 Compensation to Be Paid Contractor

The Fund shall pay to the Contractor and the latter shall accept as full and complete payment for the performance of this Contract, subject to additions or deductions as provided herein, the sum of

which sum is the amount of the Contract consideration.

Section 4.02 Value of Omitted and Extra Work

(1) The amount by which the Contract consideration is to be increased or decreased by any Change Order or Field Order shall be determined by the Fund by one or more of the following methods:

- a. By applying the applicable price or prices set forth on the attached Schedule "I" of this Agreement or by applying a unit price agreed to by both parties. Subject to the provisions of Section 4.04, this method must be used if the Contract Documents contain applicable unit prices.
- b. By estimating the fair and reasonable cost of: (i) labor, including all wages, required wage supplements and insurance required by law (workers' compensation, social security, disability, unemployment, etc.) paid to or on behalf of foremen, workers and other employees below the rank of superintendent directly employed at the site of the Project; (ii) materials; and (iii) equipment, excluding hand tools, which, in the judgment of the Fund, would have been or will be employed exclusively and directly on the omitted

work or extra work, as the case may be; and, in the case of extra work, where the same is performed directly by the Contractor, by adding to the total of such estimated costs a sum equal to 15 percent thereof, but, where the extra work is performed by a subcontractor, by adding a sum equal to 15 percent of said costs for the benefit of such subcontractor, and by adding, for the benefit of the Contractor (no further allowance will be made where extra work is performed by the sub-subcontractor), an additional sum equal to 10 percent of the first \$10,000 of the above-estimated costs, including the subcontractor's percentage override, plus 5 percent of the next \$90,000 of the total of said items, plus 3 percent of any sum in excess of \$100,000 of the total of said items. There is no markup on the premium portion of overtime labor. For the purposes of the aforesaid percentage overrides, the words "extra work" shall be defined as a complete item of added, modified or changed work as described in the Consultant's written instructions to the Contractor. Such "extra work" may include the work of one or more trades and/or subcontractors or sub-subcontractors and shall include all labor, materials, plant, equipment, tools and all incidentals directly and/or indirectly necessary, related, involved in or convenient to the successful completion of the extra work item. Where the Consultant's aforesaid written instructions to the Contractor involve both an increase and a reduction in similar or related work, the above percentage overrides will be applied only on the amount, if any, the cost of the increased work exceeds the cost of the reduced work.

No overhead and profit shall be retained by the Contractor on the cost of work determined by the method provided in Subparagraph (1)a.

All profit, overhead and expense of whatsoever kind and nature, other than those set forth above in items (i) through (iii), of the Contractor, its subcontractors and sub-subcontractors, are covered by the aforesaid percentage overrides and no additional payment therefor will be made by the Fund.

The Fund may make such cost estimate either before or after the extra work is completed by the Contractor.

- c. By determining the actual cost of the extra work in the same manner as in the above subdivision b except that actual costs of the Contractor shall be utilized in lieu of estimated costs. The Fund shall

have the option to utilize this method provided it notifies the Contractor of its intent to do so prior to the time the Contractor commences performance of such extra work.

(2) Irrespective of the method used or to be used by the Fund in determining the value of a Change Order or Field Order, the Contractor, within fifteen (15) working days after a request for the same, must submit to the Fund and the Consultant a detailed breakdown of the Contractor's estimate of the value of the omitted and/or extra work. All change and field orders must be prepared and submitted using the Fund's Open Item Log (OIL) System.

(3) Equipment Watch Rental Rate Blue Book (published online by Intertec Penton Media, Inc.) or other published rates as approved by the Fund in writing, will be utilized for the equipment rental pricing. For the purposes of paragraph (1) hereof, the cost of equipment shall be determined, irrespective of the actual price for any rental or actual cost associated with such equipment as follows: take the monthly rate listed in Equipment Watch and dividing the same by 176 hours to establish an hourly rate and then multiplying such hourly rate by the actual number of hours that the equipment was used. The Contractor will submit an actual rental invoice, or acceptable quotation from a bonafide equipment rental supplier for rented equipment when equipment is not owned by the Contractor. The equipment rental supplier cannot be an "affiliate" of the Contractor, nor in any way be related to the Contractor. If submitted invoices/quotations are acceptable to the Fund, the Contractor will be reimbursed the actual rental cost including sales tax and appropriate mark-up. If no listing of rates for an item of equipment is contained in Equipment Watch, the Fund shall determine the reasonable rate of rental of the particular item of equipment by such other means as it finds appropriate. The edition Equipment Watch to be used shall be that in effect on the date of the receipt of bids for this Contract. None of the provisions of Equipment Watch shall be deemed referred to or included in this Contract excepting only the aforesaid monthly rates. To the cost of equipment as determined above, there is to be added the actual cost of gasoline, oil, grease and maintenance required for operation of such equipment and, in the case of equipment utilized only for extra work when, in the opinion of the Consultant, suitable equipment therefor was not available on the site, the reasonable cost of transporting said equipment to and from the site. Notwithstanding the foregoing, if the Consultant should determine that the nature or size of the equipment used by the Contractor in connection with the extra work is larger or more

elaborate, as the case may be, than the size or nature of the minimum equipment determined by the Consultant to be suitable for the extra work, the cost of equipment will not be based upon the equipment used by the Contractor but instead will be based on the smallest or least elaborate equipment determined by the Consultant to have been suitable for the performance of the extra work.

(4) Unless otherwise specifically provided for in a Change Order or Field Order, the compensation specified therein for extra work includes full payment for both the extra work covered thereby and for any damage or expense caused the Contractor by any delays to other work to be done under the Contract resulting from or on account of said extra work, and the Contractor waives all rights to any other compensation for said extra work, damage or expense.

Section 4.03 Adjustment for Bond and Insurance Premiums

Upon final acceptance of the work to be performed under this Contract, the Fund may adjust the Contract consideration to reflect any changes in the cost of all required Bonds and liability and builder's risk insurance premiums which the Contractor had to pay for on all extra work and would have had to furnish and pay for on all omitted work. Unless such cost is agreed upon by the Fund and the Contractor, the Fund may calculate and determine the amount of the adjustment in the Contract consideration by estimating such costs. There is no markup on bond or insurance premium adjustment.

Section 4.04 Unit Prices

(1) Except as otherwise provided in the second paragraph of this Section, the unit prices, set forth on the attached Schedule "I" of this Agreement, will be binding upon both the Fund and the Contractor in determining the value of omitted and/or extra work, and, in the case of extra work, such unit prices shall be deemed to include all profit, overhead and expenses of whatsoever kind and nature of the Contractor, its subcontractors and sub-subcontractors, and the Contractor agrees that it shall make no claim for any profit, overhead, expense or percentage override in connection therewith.

(2) Where said Schedule "I" sets forth a unit price for added and/or deducted work, the Fund shall have the option, whenever it is found that the quantity of changed work varies by more than 15 percent from the quantity that is stated or that can be determined by the

Contract Documents at the time of execution thereof, to accept or reject such unit price for the quantity that the changed work varies by more than 15 percent from the stated or determinable quantity. Where a quantity is not specifically stated in the Contract Documents, the Fund's determination of the amount of said quantity included in the Contract Documents shall determine the applicability of this paragraph. Where the Fund, pursuant to the foregoing provisions, exercises its aforesaid option, the amount of the increase or decrease in the Contract consideration for the quantity of work which varies by more than 15 percent from the stated or determinable quantity shall be determined in accordance with the provisions of Section 4.02 of the Agreement as if there was no unit price therefor set forth in said Schedule "I".

Section 4.05 Allowances

(1) The Contractor acknowledges that the Contract consideration includes the allowances set forth on the attached Schedule "II" and "III" of this Agreement and, except for quantitative and field order allowances, it agrees to cause the work covered thereby to be done by such contractors for such sums as the Fund may direct. Where cash allowances are provided, the allowances shall be deemed to include the purchase of the materials and/or equipment and the delivery of same to the job site. Unless otherwise specified in the Contract Documents, cash allowances do not include the proper installation of the materials and/or equipment or the connection for final utilities thereto; the cost of said installation and/or connection having been included in the amount of the Contract consideration.

(2) The Contractor acknowledges that the Contract consideration includes such sums for expenses and profit on account of cash allowances as it deems proper and that it shall make no claim for expenses or profit or any percentage override in addition thereto; said items having been included in the amount of the Contract consideration.

(3) In the event any of the cash allowances listed below are either higher or lower than the cost of having the work done in accordance herewith, the Contract consideration shall be adjusted to reflect such variance, the amount of said adjustment to be the difference between the amount of the allowance and the actual cost of performing the work covered thereby.

(4) When quantitative allowances are provided, progress payments thereof to the Contractor will be based upon the applicable unit prices set forth on the

attached Schedule "I" of the Agreement, subject, however, to the provisions of paragraph (2) of Section 4.04. In the event any of said quantitative allowances are more than or less than the actual quantity of work performed, the Contract consideration shall be adjusted to reflect such variance, the amount of said adjustment to be determined in accordance with the provisions of Sections 4.02, 4.04 and 4.05A of the Agreement.

Section 4.05A Field Orders

When the Agreement contains a Field Order Allowance, the bid shall include the amount of such allowance. Said amount shall cover the cost of additional labor, materials and time for contingent activities within the scope of the Agreement as directed and described by the Fund in writing in a Field Order. The Field Order will include a description of the work and the method for determining the value of such work. The value of the work directed under this allowance will be determined by one or more of the provisions of Section 4.02. If the net cost(s) of all Field Orders issued are more or less than the specified amount of the allowance, the Contract sum will be adjusted by Change Order.

Section 4.06 Deductions for Unperformed and/or Uncorrected Work

(1) Without prejudice to any other rights, remedies or claims of the Fund, in the event that the Contractor at any time fails or neglects to supply working forces and materials of the proper quantity and quality necessary, in the opinion of the Consultant or the Fund, to comply with the approved time progress schedule, or fails in any respect to prosecute the work with promptness and diligence or causes by any action or omission the stoppage or delay of or interference with the work of any other contractor having a contract with the Fund, or fails in the performance of any obligations and responsibilities under this Contract, then, and in that event, the Fund, acting itself or through the Consultant, may, upon three (3) working days' notice to the Contractor, either itself provide or have any other contractor, including but limited to the Fund's Job Order Contracting Program, provide any and all labor or materials or both necessary, in its opinion, to correct any aforesaid deficiency of the Contractor, and the Fund will thereafter backcharge the Contractor by issuing a Change Order reducing the amount of the Contract consideration for all costs and expenses it incurs in connection with the correction of such deficiency. The Contractor agrees that the Fund may deduct from any application for payment made by the Contractor, any

and all Design Professional, Consultant and/or Construction Management fees and costs incurred by the Fund together with a markup upon such hard costs in the amount of 15% for services required in connection with the correction of such deficiency(ies).

(2) Notwithstanding any provisions in the Contract Documents to the contrary, if the Fund deems it inexpedient to correct work not done in accordance with the Contract or any work damaged as a result thereof, it shall notify the Contractor of such fact and the latter shall not remedy or correct the same. In such event, however, the amount of the Contract consideration shall be decreased by an amount, determined by the Fund, which is equal to the difference in value of the work as performed by the Contractor and the value of the work had it been satisfactorily performed in accordance with the Contract or which is equal to the cost of performing the corrective work, whichever shall be the higher amount.

Section 4.07 Liquidated Damages

In the event that the Contractor shall fail to substantially complete all the work within the time fixed for such completion on page A-1, or within the time to which such completion may have been extended or in the event that the Contractor abandons the work and the same is not substantially completed within the aforesaid time for such completion, the Contractor must pay to the Fund as damages for each calendar day of delay in completing the work the amount set forth on page A-1. In view of the difficulty of accurately ascertaining the loss which the Fund will suffer by reason of delay in completion of the work hereunder, said sum is hereby fixed and agreed as liquidated damages which the Fund will suffer by reason of such delay and not as a penalty. The Fund may deduct and retain out of the monies which may become due hereunder to the Contractor the amount of any such liquidated damages and, in case the amount which may become due to the Contractor under the provisions of the Contract may be less than the liquidated damages suffered by the Fund, the Contractor shall pay the difference, upon demand, to the Fund.

Section 4.08 Contract Breakdown

Prior to the submission of its first application for a progress payment, the Contractor shall present to the Fund and the Consultant for their approval a detailed schedule showing the breakdown of the Contract consideration. The Contract Breakdown Summary shall be further broken down on separate Fund provided forms as required by the Consultant and the

Fund. Contract Breakdown Summary and supporting forms shall be able to interface with the Fund's electronic payment system. Such schedule must contain the amount estimated for each part of the work and quantity survey for each part of the work. It shall also list the estimated value of the Contractor's guarantee obligations under the provisions of the Contract Documents, which is hereby fixed at \$5,000 or one-half of one percent (1/2%) of the Contract award amount, whichever is the lesser sum. Such schedule shall be revised by the Contractor until the same shall be satisfactory to the Fund and the Consultant and shall not be changed after the Fund and the Consultant have approved the same. The amounts set forth in the schedule will not be considered as fixing the basis for additions to or deductions from the Contract consideration.

Section 4.09 Prompt Payment Requirements

(1) For the purposes of Article XI-A of the State Finance Law, the Controller's Office of the State University Construction Fund, whose mailing address is The H. Carl McCall SUNY Building, 353 Broadway, Albany, New York 12246, is the Fund's designated payment office. Applications for payment must contain the approval of the Consultant before being submitted to the Fund.

(2) Whenever the Consultant's approval of an application for payment is required under the Contract, the Consultant shall have fifteen (15) calendar days, after receipt of such application, to inspect the work before acting on the application.

(3) Until such time that the Contract is approved by the Fund, the thirty (30) day period, referred to in Article XI-A of the State Finance Law for the payment of invoices without interest, shall not begin.

Section 4.10 Progress Payments

(1) Unless otherwise provided in the Contract, progress payments will be made as the work progresses upon applications submitted by the Contractor and approved by the Consultant and the Fund. Payment of such approved applications shall be made by the Fund within thirty (30) days after such approval has been given.

(2) The Fund shall make progress payments to the Contractor on the basis of such approved applications, less an amount equal to 5 percent thereof, plus an amount necessary, in the Fund's judgment, to satisfy any claims, liens or judgments against the Contractor which have not been suitably

discharged, , together with any back charges and offsets which are deemed necessary or likely to be incurred by the Fund as a result of any failure by the Contractor to fully, completely, accurately and timely perform its work, which it shall reserve from each such payment until all of the work covered by the Contract has been completed.

(3) When the Fund and the Consultant have determined that all the work is substantially completed, or that a substantial portion of the permanent construction has been completed and accepted, the Fund shall make a progress payment to the Contractor, on the basis of an application submitted by the Contractor and approved by the Consultant and the Fund, which shall reduce the unpaid amount due to the Contractor under the terms of the Contract, including all monies retained by the Fund from previous progress payments to the Contractor, to an amount equal to two (2) times the cost, estimated by the Consultant, of performing, in accordance with the Contract, all uncompleted, unaccepted and corrective work, plus an amount necessary, in the Fund's judgment, to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged. As the remaining items of work are satisfactorily completed or corrected, the Fund shall make progress payments to the Contractor, on the basis of applications submitted by the Contractor and approved by the Fund and the Consultant, covering said items of work less an amount necessary, in the Fund's judgment, to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged.

Section 4.11 Applications for Progress Payments

The Contractor shall prepare all applications for progress payments for work performed, together with supporting data and computations as are deemed necessary by the Consultant to determine the accuracy of the application. The application for payment and all required supporting documentation shall be submitted using the Fund's prescribed forms and electronic payment system. The Contractor shall include with such applications reports detailing actual payments to minority and women-owned businesses who participate on Fund projects. Failure of the Contractor to submit applications for progress payments, or lack of complete and accurate supporting data, shall be sufficient reason for withholding payment until such omissions or errors are rectified. Unless otherwise directed, such applications, signed and certified as correct by the Contractor, shall be delivered by the Contractor to the

Consultant once each month showing the total value of work completed and in place on the last day of the payment period covered by the application.

Section 4.12 Progress Payments for Materials Delivered to Site

(1) Progress payments made in accordance with Section 4.10 shall include a payment for materials and equipment to be furnished and installed under the Contract, after such materials and equipment have been delivered and accepted at the site of the work.

(2) Materials and equipment for which such progress payment has been made shall not be removed from the site, shall be stored until incorporated into the work in a location approved by the Consultant and shall be adequately protected from fire, theft and vandalism, the effects of the elements and any other damage whatsoever, and shall at all times be available for inspection by the Consultant and the Fund.

Section 4.13 Transfer of Title to Materials Delivered to Site

Title to all supplies and materials to be furnished or provided by the Contractor to the Fund pursuant to the provisions of the Contract Documents shall immediately vest in and become the sole property of the Fund upon delivery of such supplies and materials to the site. Notwithstanding such transfer of title, the Contractor shall have the full continuing responsibility to install such materials and supplies, protect them, maintain them in proper condition and forthwith repair, replace and make good any damage thereto without cost to the Fund until such time as the work covered by the Contract is fully accepted by the Fund. Such transfer of title shall in no way affect any of the Contractor's obligations under the Contract. In the event that, after title has passed to the Fund, any of such supplies and materials are rejected as being defective or otherwise unsatisfactory, title to all such supplies and materials shall be deemed to have been transferred back to the Contractor.

Section 4.14 Progress Payments for Materials Stored Off Site

(1) Progress payments made in accordance with Section 4.10 shall include a payment for materials and equipment which are in short and/or critical supply or have been specially fabricated for the Project. Materials and equipment, for which a progress payment is made pursuant to the preceding sentence, shall be stored by the Contractor, after fabrication, until

such time as their delivery to the site is required, at a facility and location approved by the Consultant; shall be adequately protected from fire, theft and vandalism, the effects of the elements and any other damage whatsoever; and shall at all times be available for inspection by the Consultant and the Fund. No progress payment shall, however, be made for said materials and equipment until:

- a. The Contractor furnishes to the Fund a bill of sale listing quantity and costs of said materials and equipment f.o.b. point of origin;
- b. The Consultant shall have inspected said materials and equipment and recommended payment therefor; and
- c. The Contractor furnishes to the Fund a builder's risk insurance policy, with the broad form extended coverage endorsement, for said materials and equipment, in an amount equal to 100 percent of the value thereof, which policy shall be maintained, at the sole cost and expense of the Contractor, until said materials and equipment have been incorporated into the Project. The said insurance policy shall contain a provision that the loss, if any, is to be made adjustable with and payable to the Fund as trustee for the insured, i.e., the Fund and the Contractor, and a provision that it shall not be changed or cancelled and that it will be automatically renewed upon expiration and continued in force unless the Fund is given thirty (30) days written notice to the contrary.
- d. The Contractor shall develop and provide a preventive maintenance log for stored equipment when determined appropriate by the Consultant. The Contractor shall provide timely notification and opportunity for the Consultant and the Fund to view the Contractor's preventative maintenance efforts.

(2) Materials and equipment for which a progress payment has been made by the Fund pursuant to this Section shall be, become and remain the sole property of the Fund; provided, however, that the Contractor shall have the full continuing responsibility to install such materials and equipment, to deliver it to the site, to protect it, to maintain it in proper condition and to forthwith repair, replace and make good any damage thereto without cost and/or additional time to the Fund until such time as the work covered by the Contract is fully accepted by the Fund. Such transfer of title shall in no way affect any of the Contractor's obligations under the Contract.

Section 4.15 Withholding of Progress Payments

Notwithstanding anything contained in the Contract to the contrary, the Fund may withhold payment of all or any part of a progress, final or guarantee payment, in such an amount as it may deem proper to enforce the provisions of the Contract and to satisfy the claims of third parties, when:

- a. The Fund shall learn of any claim, of whatsoever nature or kind, against the Fund or the Contractor, which in any way arises or is alleged to arise out of or as a result of or in connection with the performance by the Contractor of the work covered by the Contract or out of or in connection with the Contractor's operations or performance at or in the vicinity of the construction site, that, in the opinion of the Fund, may not be adequately covered by insurance.

If an action on such claim is timely commenced and the liability of the Fund and/or the Contractor shall have been established therein by a final judgment of a court of competent jurisdiction, or if such claim shall have been admitted by the Contractor to be valid, the Fund shall pay such judgment or admitted claim out of the monies retained by it under the provisions of the Contract and return the balance, if any, without interest, to the Contractor.

The Fund may withhold from the Contractor any payments retained by it until such time as all such claims are either satisfied or barred by law from being presented. At such time the Fund, upon written demand by the Contractor, shall return to the Contractor the amount so withheld, without interest.

- b. The Contractor has not complied with any lawful or proper direction of the Consultant or the Fund or their representatives concerning the work covered by the Contract or the performance of the Contract or the production of records as required under the provisions of the Contract.
- c. There exists any of the conditions, listed in Section 2.26, which would allow the Fund to declare the Contractor in default of the whole or any part of the work.
- d. The Contractor is a foreign contractor and has not furnished satisfactory proof that all taxes due by such Contractor under the provisions of the Tax Law have been paid. The Certificate of the New

York State Tax Commission to the effect that all such taxes have been paid shall be conclusive proof of the payment of such taxes. The term "foreign contractor" as used herein means, in the case of an individual, a person who is not a resident of the State of New York; in the case of a partnership, one having one or more partners not a resident of the State; and in the case of a corporation, one not organized under the laws of the State of New York.

- e. The Contractor, upon request of the Fund at any time after the initial progress payment by the Fund to the Contractor, fails to furnish the Fund with such documentary evidence that the Fund may deem necessary to prove to it that material and labor paid for by the Fund under previous applications for payment submitted have been paid for by the Contractor and that there are no outstanding claims or liens in connection therewith or fails to satisfy the Fund that the Contractor, with good cause, has sufficiently provided for the payment and/or satisfaction of claims for said material and labor.

Section 4.16 Lien Law

The attention of the Contractor is specifically called to the provisions of the Lien Law of the State of New York, wherein funds received by a Contractor for a public improvement are declared to constitute trust funds in the hands of such Contractor to be applied first to the payment of certain claims.

Section 4.17 Substitution of Securities for Retainage

Any time after 50 percent of all the work has been completed, the Fund, if the progress and performance of the work is satisfactory to it, on request of the Contractor, will allow the Contractor to withdraw up to 50 percent of the aforesaid amount retained by the Fund by depositing with the Comptroller of the State of New York government securities, of the type and kind specified in Section 139 of the State Finance Law, having a market value not exceeding par, at the time of deposit, equal to the amount so withdrawn. The Comptroller of the State of New York shall, from time to time, collect all interest or income on the obligations so deposited, and shall pay the same, when and as collected, to the Contractor. If the deposit be in the form of coupon bonds, the coupons as they respectively become due shall be delivered to the Contractor; provided, however, that the Contractor shall not be entitled to interest or coupons or income on any of the deposited securities, the proceeds of

which have or will be used or applied by the Fund. In the event that the Contractor does not, in accordance with the terms and provisions of the Contract, comply with and fulfill all of its obligations and responsibilities thereunder, the Comptroller of the State of New York shall have the right to sell, assign, transfer or otherwise dispose of the aforesaid securities and the Fund shall have the right to use and apply all or any part of the monies obtained by the Comptroller of the State of New York from such a sale, assignment, transfer or disposition or from the collection of interest or income from said securities to the performance and fulfillment of said obligations and responsibilities. Notwithstanding the foregoing, when the Fund makes a payment under Section 4.10 (3) of the Agreement, it will return to the Contractor, as part of such payment, its substituted securities, and thereafter all retention of the Fund shall be in funds and not in substituted securities.

Section 4.18 Final Payment

Upon acceptance of all the work, except for the Contractor's guarantee obligations under Section 2.25 of the agreement and the Contractor's guarantee obligations under any provision of the Specifications, the Contractor shall prepare and submit to the Fund and the Consultant, for their approval, a final application for payment, which the Fund, within thirty (30) days after its approval of same, shall pay. Such application and payment shall be in an amount equal to 100 percent of the Contract consideration excluding the Contractor's guarantee obligations, less:

- a. All previous payments by the Fund to the Contractor;
- b. All deductions authorized to be made by the Fund under the Contract; and
- c. An amount necessary, in the Fund's judgment, to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged.
- d. The Contractor shall not be entitled to any interest on the monies retained by the Fund pursuant to Subdivision c of Section 4.18 of the Agreement.

Section 4.19 Acceptance of Final Payment

- (1) The acceptance by the Contractor, or by any one claiming by or through it, of the final payment shall, except with respect to the amount retained by the Fund pursuant to the provisions of subdivisions b and c of Section 4.18 of the Agreement, constitute and

operate as a release to the Fund from any and all claims of any liability for anything theretofore done or furnished for or relating to or arising out of the work covered by the Contract and for any prior act, neglect or default on the part of the Fund or any of its trustees, officers, agents or employees in connection therewith.

(2) Should the Contractor refuse to accept the final payment as tendered by the Fund or should the Contractor refuse to execute the final application for payment without protest and without reserving any rights or claims against the Fund, it shall constitute a waiver of any right to interest on the amount of the payment so tendered and/or on the amount set forth in said final application for payment.

Section 4.20 Guarantee Payment

(1) Subject to the provisions of the second paragraph of this Section, at the expiration of one (1) year after the Fund has accepted all the work covered by the Contract, the Contractor shall prepare and submit to the Fund and the Consultant, for their approval, a guarantee application for payment, which the Fund, within thirty (30) days after its approval of same, shall pay. Such application and payment shall be in an amount equal to the monies retained by the Fund for the Contractor's guarantee obligations under the Agreement, less any monies deducted by the Fund under this Section. The Contractor shall not be entitled to any interest on the monies retained by the Fund pursuant to subdivision c of Section 4.18 of the Agreement.

(2) In the event the Contractor does not, in accordance with the terms and provisions of the Contract, complete all corrective work or comply with and fulfill its contractual obligations, the Fund may use and apply all or any part of the monies retained by it to have such work or obligations performed or fulfilled by a person, firm or corporation other than the Contractor. The obligations of the Contractor, under the terms and provisions of the Contract, shall not, however, be limited to the monies retained by the Fund pursuant to the provisions of the Contract.

(3) No payments may be made under this agreement for work completed more than 365 days after the completion date unless the date/duration listed on page A-1, is extended in writing by the Fund.

Section 4.21 Acceptance of Guarantee Payment

The acceptance by the Contractor or by anyone claiming by or through it, of the guarantee payment shall constitute and operate as a release to the Fund

from any and all claims in connection with monies retained by the Fund. Should the Contractor refuse to accept the guarantee payment as tendered by the Fund or should the Contractor refuse to execute the guarantee application for payment without protest and without reserving any rights or claims against the Fund, it shall constitute a waiver of any right to interest on the amount of the payment so tendered and/or on the amount set forth in said guarantee application for payment.

Section 4.22 Contractor Limited to Money Damages

Inasmuch as the Contractor can be compensated adequately by money damages for any breach of the Contract which may be committed by the Fund, the Contractor agrees that no default, act or omission of the Fund shall constitute a material breach of the Contract entitling it to cancel or rescind the same or to suspend or abandon performance thereof; and it hereby waives any and all rights and remedies to which it might otherwise be or become entitled to because of any wrongful act or omission of the Fund or its representatives, saving only its right to money damages.

Section 4.23 No Estoppel or Waiver

(1) The Fund shall not be precluded or estopped by any inspection, acceptance, application for payment or payment, final or otherwise, issued or made under the Contract or otherwise issued or made by it, the Consultant, or any trustee, officer, agent or employee of the Fund, from showing at any time the true amount and character of the work performed, or from showing that any such inspection, acceptance, application for payment or payment is incorrect or was improperly issued or made; and the Fund shall not be precluded or estopped, notwithstanding any such inspection, acceptance, application for payment or payment, from recovering from the Contractor any damages which it may sustain by reason of any failure on its part to comply strictly with the Contract and any monies which may be paid to it or for its account in excess of those to which it is lawfully entitled.

(2) Neither the acceptance of all or any part of the work covered by the Contract; nor any payment therefor; nor any order or application for payment issued under the Contract or otherwise issued by the Fund, the Consultant, or any trustee, officer, agent or employee of the Fund; nor any permission or direction to continue with the performance of the Contract before or after its specified completion date; nor any performance by the Fund of any of the Contractor's

duties or obligations; nor any aid lent to the Contractor by the Fund in its performance of such duties or obligations; nor any delay or omission by the Fund to exercise any right or remedy accruing to it under the terms of the Contract or existing at law or in equity or by statute or otherwise; nor any other thing done or omitted to be done by the Fund, its trustees, officers, agents or employees; shall be deemed to be a release to the Contractor or its sureties from any obligations, liabilities or undertakings in connection with the Contract or the Performance Bond or a waiver of any provision of the Contract or of any rights or remedies to which the Fund may be entitled because of any breach thereof, excepting only a written instrument expressly providing for such release or waiver. No cancellation, rescission or annulment hereof, in whole or as to any part of the Contract, because of any breach hereof, shall be deemed a waiver of any money damages to which the Fund may be entitled because of such breach. No waiver by the Fund of any breach of the Contract shall be deemed to be a waiver of any other or any subsequent breach.

Section 4.24 Limitation of Actions

(1) No action or proceeding shall be maintained by the Contractor, or anyone claiming under or through the Contractor, against the Fund, or its trustees, officers, agents or employees, upon any claim arising out of or based upon the Contract or any breach thereof or by reason of any act or omission or requirement of the Fund, or its trustees, officers, agents or employees, unless:

- a. Such action or proceeding is instituted in the Supreme Court of the State of New York in and for the County of Albany;
- b. The Contractor or the person claiming under or through it shall have strictly complied with all requirements relating to the giving of notices and information with respect to such claims and shall have provided the Fund with both electronic and hard copy versions of any claims, including all required information and electronic and hard copy versions of all contractually required notices that the Contractor provided to the Fund and the Consultant throughout the duration of the Contract ;
- c. Such action or proceeding by the Contractor shall be commenced within eighteen months after the date of substantial completion set by the Fund or its Consultant and issued in writing to the Contractor. Any action or proceeding not

commenced within this time frame shall be dismissed with prejudice;

- d. If the Contract is terminated or the Contractor declared in default by the Fund, such action is commenced within six (6) months after the date of such termination or declaration of default by the Fund; and
- e. All claims and disputes which are subject to or related to this Contract and the Project shall be subject to non-binding mediation, at the sole option and discretion of the Fund. Should the Fund at its sole option and in the exercise of its sole discretion elect to mediate under this clause, then a letter from the Fund indicating the completion of such mediation shall be a condition precedent to any litigation by Contractor against the Fund or the State of New York. In the absence of the Fund exercising its right to proceed to mediation, the condition precedent to any litigation against the Fund of the State of New York, shall be a letter citing that the Fund declines its rights under this clause. The costs of any mediation shall be paid equally by the parties to the mediation.

(2) Notwithstanding anything in the laws of the State of New York to the contrary, the Contractor, or anyone claiming under or through the Contractor, shall not be entitled to any additional time to begin anew any other action if an action commenced within the times herein specified is dismissed or discontinued for any reason whatsoever.

Section 4.25 Electronic Payments

The Contractor shall provide complete and accurate payment applications in order to receive payment. Payment applications submitted must contain all information and supporting documentation required by the Fund. Payment for applications submitted by the Contractor shall only be rendered electronically unless payment by paper check is expressly authorized by the Fund's General Manager, in the General Manager's sole discretion, due to extenuating circumstances. Such electronic payment shall be made in accordance with ordinary State procedures and practices. The Contractor shall comply with the State Comptroller's procedures to authorize electronic payments. Authorization forms are available at the Office of the State Comptroller's website at www.osc.state.ny.us/epay/index.htm; by email at epunit@osc.state.ny.us; or by telephone at 518-474-4032. The Contractor acknowledges that it will not receive payment on any invoices submitted under this Contract if it does not comply with the State

Comptroller's electronic payment procedures, except where the Fund's General Manager has expressly authorized payment by paper check as set forth above.

Article V

Protection of Rights and Property

Section 5.01 Accidents and Accident Prevention

The Contractor shall at all times take reasonable precautions for the safety of persons engaged in the performance of the work. The Contractor shall comply fully with all applicable provisions of the laws of the State of New York and OSHA and with all valid rules and regulations thereunder. The Contractor's attention is specifically called to the applicable rules and regulations, codes and bulletins of the New York State Department of Labor.

Section 5.02 Adjoining Property

The Contractor shall be required to protect all the adjoining property and to repair or replace any such properties damaged or destroyed by it, its employees or subcontractors through, by reason of or as a result of activities under, for or related to the Contract.

Section 5.03 Emergencies

(1) In case of an emergency which threatens loss or injury to persons or property, the Contractor will be allowed to act, without previous instructions from the Consultant or the Fund, in a diligent manner, to the extent required to avoid or limit such loss or injury, and it shall notify the Consultant and the Fund immediately thereafter of the action taken by it and of such emergency. Where the Contractor has not taken action but has notified the Consultant or the Fund of an emergency which threatens loss or injury to persons or property, it shall act in accordance with the instructions and/or authorization by the Consultant or the Fund.

(2) In the event that the Contractor performs extra work in accordance with the preceding paragraph, it will be compensated therefor in accordance with the provisions of Section 4.02.

Section 5.04 Fire Safety

(1) Contractor shall comply with the General Requirements, Section paragraph titled Temporary Fire Protection.

(2) Solid fuel salamanders and heaters shall not be used by the Contractor or any of its subcontractors. All other salamanders used by the Contractor or any of its subcontractors shall require constant attendance of competent persons on each floor where in use.

(3) All temporary fabric used by the Contractor or any of its subcontractors for curtains or awnings shall be either non-combustible or flame retarded so that it will not burn or propagate flame.

Section 5.05 Risks Assumed by Contractor

(1) To the fullest extent permitted by law, the Contractor solely assumes the following distinct several risks whether they arise from acts or omissions (whether negligent or not and whether supervisory or otherwise) of the Contractor, of the Fund, of third persons or from any other cause, including unforeseen obstacles and difficulties which may be encountered in the prosecution of the work covered by the Contract, whether such risks are within or beyond the control of the Contractor and whether such risks involve a legal duty, primary or otherwise, imposed upon the Fund, the Dormitory Authority of the State of New York, the State of New York or the State University of New York, excepting only risks which arise from defects in maps, plans, designs or Specifications prepared, acquired or used by the Consultant or the Fund, from the negligence of the Fund, its agents or employees or from affirmative acts of the Fund, the Dormitory Authority of the State of New York, the State of New York or the State University of New York or their trustees, officers, agents or employees committed with intent to cause the loss, damage and injuries herein below set forth:

- a. The risk of loss or damage, direct or indirect, to the work covered by the Contract or to any plant, equipment, tools, materials or property furnished, used, installed or received by the Fund or by the Contractor or any subcontractor, material man or worker performing services or furnishing materials for the work covered hereunder. The Contractor shall bear such risk of loss or damage until the work covered by the Contract has been finally accepted by the Fund or until completion of removal of such plant, equipment, tools, materials or property from the construction site and the vicinity thereof, whichever event occurs last. In the event of such loss or damage, the Contractor shall forthwith repair, replace and/or make good any such loss or damage without cost to the Fund.
- b. The risk of claims, just or unjust, by third persons against the Contractor, the Fund, the Dormitory

Authority of the State of New York, the State of New York, or the State University of New York on account of wrongful death, bodily injuries and property damage, direct or consequential, loss or damage of any kind whatsoever arising or alleged to arise out of or as a result of or in connection with the performance by the Contractor of the work covered by the Contract (whether actually caused by or resulting from the performance of the Contract) or out of or in connection with the Contractor's operations or presence at or in the vicinity of the construction site.

(2) To the fullest extent permitted by law, the Contractor shall indemnify and save harmless the Fund, the Dormitory Authority of the State of New York, the State of New York and the State University of New York, their trustees, officers, agents or employees against all claims described above and for all costs and expenses incurred by them in the defense, settlement or satisfaction thereof, including attorneys' fees and court costs. If so directed, the Contractor shall at its own expense defend against such claims, in which event it shall not, without obtaining express advance permission from Counsel of the Fund, raise any defense involving in any way jurisdiction of the tribunal over the Fund, governmental nature of the Fund or the provisions of any statutes respecting suits against the Fund.

(3) Neither the Fund's final acceptance of the work to be performed hereunder nor the making of any payment shall release the Contractor from its obligations under this Section. The enumeration elsewhere in the Contract of particular risks assumed by the Contractor or of particular claims for which it is responsible shall not be deemed to limit the effect of the provision of this Section or to imply that it assumes or is responsible for only risks or claims of the type enumerated.

Section 5.06 Compensation and Liability Insurance

(1) General Requirements

a. Prior to the commencement of the work to be performed by the Contractor, the Contractor shall procure at its sole cost and expense, and maintain in force at all times during this Agreement until Final Payment and as further required by the Contract, policies of insurance as herein set forth below. All insurance shall be written by insurance carriers approved by the Fund, licensed to do business in the State of New York ("admitted"

carriers), and rated at least "A-" by A.M. Best Company.

- b. Prior to the commencement of the work, the Contractor shall submit to the Fund, certificates of insurance, in a form acceptable to the Fund, showing evidence of compliance with all insurance requirements contained in this Agreement. Certificates of Insurance (with the exception of Workers' Compensation and Disability) must be provided on an ACORD 25 Certificate of Insurance, or an equivalent form. Certificates of Insurance shall disclose any deductible, self-insured retention, aggregate limit or any exclusion to the policy that materially changes the coverage required by the Contract; specify the additional insureds and named insureds as required herein; and be signed by an authorized representative of the insurance carrier or producer. Deductibles or self-insured retentions above \$25,000 are subject to approval by the Fund and additional security may be required. Certificates shall reference the Contract number. Only original documents will be accepted.
- c. All insurance shall provide that the required coverage apply on a primary and not on an excess or contributing basis as to any other insurance that may be available to the Fund for any claim arising from the Contractor's work under this Agreement, or as a result of Contractor's activities. Any other insurance maintained by the Fund shall be in excess of and shall not contribute with the Contractor's insurance, regardless of the "other insurance" clause contained in the Fund's own policy of insurance. A copy of the endorsement reflecting this requirement may be requested by the Fund.
- d. Not less than thirty days prior to the expiration date or renewal date, the Contractor shall supply the Fund with updated replacement certificates of insurance and endorsements. The Contractor shall advise the Fund of any letter or notification that cancels, materially changes, or non- renews the policy and Contractor shall require the insurance carrier(s) to copy the Fund on any letter or notification that cancels, materially changes, or non- renews the policy. If, at any time during the period of the Agreement, insurance as required is not in effect, or proof thereof is not provided to the Fund, the Fund shall have the options to (i) direct the Contractor to stop work with no additional cost or extension of time due on account thereof; or (ii) treat such failure as an event of default under Section 2.26 of the Agreement. At any time the

coverage provisions and limits of the policies required herein do not meet the provisions and limits set forth in the Agreement the Contractor shall immediately cease Work on the Project. The Contractor shall not resume Work on the Project until authorized to do so by the Fund. Any delay or time lost as a result of the Contractor not having insurance required by the Agreement shall not give rise to a delay claim or any other claim against the Fund. If required by the Fund, Contractor shall deliver to the Fund within forty-five (45) days of such request, a copy of any or all policies of insurance not previously provided, certified by the insurance carrier as true and complete.

- e. Should the Contractor engage a subcontractor, the Contractor shall impose the insurance requirements of this document on those entities, as applicable. Required insurance limits should be determined commensurate with the work of the subcontractor. Contractor shall keep the subcontractor certificates of insurance on file and produce them upon the demand of the Fund.
- f. The aggregate insurance limits set forth herein shall apply separately to each contract for which a certificate of insurance and/or policy is issued.
- g. Unless otherwise agreed to in writing by the Fund, policies must be endorsed to provide that there shall be no right of subrogation against the Fund. To the extent that any of the policies of insurance prohibit such a waiver of subrogation, Contractor shall secure the necessary permission to make this waiver.
- h. Except as otherwise specifically provided herein or agreed in writing, policies must be written on an occurrence basis. The insurance policy(ies) shall name the Fund, State University of New York, State of New York, its officers, agents, and employees as additional insureds thereunder. The additional insured requirement does not apply to Workers' Compensation or Disability coverage. Include ISO Endorsement CG 20 10 11 85 or its equivalent.

(2) Specific Coverage and Limits

The Contractor shall obtain and maintain in full force and effect, the following insurance with limits not less than those described below and as required by the terms of the Contract, or as required by law, whichever is greater:

- a. Commercial General Liability Insurance. A Commercial General Liability insurance policy with coverage that shall include, but not be limited to coverage for bodily injury, property damage, personal/advertising injury, premises liability, independent contractors, blanket contractual liability including tort liability of another assumed in Contract, liability arising from all work and operations under this Agreement, defense and indemnification obligations, including those assumed under Contract, cross liability coverage for additional insureds, products/completed operations for a term no less than three years commencing upon acceptance of the work, explosion, collapse, and underground hazards, contractor means and methods, and liability resulting from Section 240 or Section 241 of the NYS Labor Law. The limits under such policy shall not be less than: \$5,000,000 each occurrence; \$5,000,000 general aggregate; and products/completed operations with an aggregate limit of \$5,000,000.
- b. Workers Compensation and Disability Benefits as required by New York State.
- c. Comprehensive Business Automobile Liability Insurance. A policy with a combined single limit for bodily injury and property damage of no less than \$1,000,000 covering liability arising out of the use of any motor vehicle in connection with the work, including owned, leased, hired, and non-owned vehicles bearing, or, under the circumstances under which they are being used, required by the Motor Vehicle Laws of the State of New York to bear license plates. If the Contract involves the removal of hazardous waste from the project site or otherwise transporting hazardous materials, pollution liability coverage for covered autos shall be provided by form CA 99 48 03 06 or CA 00 12 03 06 and the Motor Carrier Act Endorsement (MCS90) shall be attached.
- d. Umbrella and Excess Liability. When the limits of the Commercial General Liability, Auto, and/or Employers Liability policies procured are insufficient to meet the limits specified, the Contractor shall procure and maintain Commercial Umbrella and/or Excess Liability policies with limits in excess of the primary, provided, however, that the total amount of insurance coverage is at least equal to the requirements set forth above. Such policies shall follow the same form as the primary. Any insurance maintained by the Fund or additional insured shall be considered excess of and shall not contribute with any other

insurance procured or maintained by the Contractor including primary, umbrella and excess liability regardless of the "other insurance" clause contained in either party's policy.

- e. **Owner's Protective Liability Insurance.** A policy issued to and covering the liability for damages imposed by law upon the Fund, the Dormitory Authority of the State of New York, the State of New York and the State University of New York, their trustees, officers, agents or employees, with respect to all operations under the Contract by the Contractor and its subcontractors, and/or their interest in the Project and the property upon which work under the Contract is to be performed, including omissions and supervisory acts of the former. Said insurance policy limits shall be no less than \$1,000,000 each occurrence and \$2,000,000 general aggregate.
- f. **Asbestos Abatement Insurance.** A liability insurance policy issued to and covering the liability, of the Contractor and/or subcontractor engaged in the removal, handling or wrapping of asbestos, if any of such work is to be performed under the Contract, for bodily injury, illness, sickness or property damage caused by exposure to asbestos in an amount not less than \$1,000,000 per occurrence and \$2,000,000 aggregate. The Contractor and/or its aforesaid subcontractor shall either obtain an endorsement to the aforesaid required insurance policy adding the Fund, the Dormitory Authority of the State of New York, the State of New York and the State University of New York, their trustees, officers, agents or employees, as additional parties insured thereunder or shall obtain a separate owner's protective liability insurance policy for such parties with coverage similar to that required by the first sentence of this subdivision. In addition, any Contractor or subcontractor engaged in the removal, handling, or wrapping of asbestos shall, to the fullest extent permitted by law, hold harmless and indemnify the Fund, the Dormitory Authority of the State of New York the State of New York and the State University of New York, their trustees, officers, agents or employees, for any claims or liabilities in connection with illness or sickness arising from work performed, not performed, or which should have been performed. The Contractor shall have said hold-harmless and indemnification conditions stipulated in all Contracts with subcontractors.

Section 5.07 Builder's Risk

(1) The Contractor shall procure and maintain, at its own cost and expense, until final acceptance of all work covered by this Contract or until the Project has been turned over for use by the State University of New York, whichever event occurs earlier, a builder's risk insurance policy covering all risks, with fire, extended coverage, vandalism and malicious mischief coverage. In the event the loss occurs at an occupied facility, the policy shall permit occupancy without the consent of the insurance company. The policy shall cover the cost of removing debris, including demolition as may be legally necessary by operation of any law, ordinance, or regulation, and property of the State held in their care, custody and/or control.

(2) The policy shall be in an amount equal to the Project's insurable value, i.e., the Contract consideration less the cost of the Contractor's Performance and Labor and Material Bonds; the cost of trees, shrubbery, lawn grass, plants and the maintenance of the same; the cost of demolition; the cost of excavation; the cost of foundations, piers or other supports which are below the undersurface of the lowest basement floor, or where there is no basement, which are below the surface of the ground, concrete and masonry work; the cost of underground flues, pipes or wiring; the cost of earthmoving, grading and the cost of paving, roads, walks, parking lots or athletic fields; and the cost of bridges, tunnels, dams, piers, wharves, docks, retaining walls and radio and/or television towers and antennas.

(3) The policy may contain a provision for a \$500 deductible for each loss to a Project having an insurable value of less than \$1,500,000 and a \$1,000 deductible for each loss to a Project having an insurable value of \$1,500,000 or more.

(4) The Fund, the Contractor and its subcontractors, as their interests may appear, shall be named as the parties insured under said policy.

(5) The Contractor shall have the sole responsibility to promptly report any loss to the insurer and/or its representatives and to furnish the latter with all necessary details relating to the occurrence of the loss and the amount thereof. The Fund, the Contractor and all subcontractors of the Contractor waive all rights, each against the others, for damages caused by fire or other perils covered by insurance provided under the terms of this Section, except such rights as they may have to the proceeds of insurance received; provided, however, this waiver shall not apply to any

manufacturer, supplier or similar agent under any guarantee or warranty.

(6) The Contractor shall not violate or permit to be violated any condition of such policy and shall at all times satisfy the fire safety requirements of the Fund and the insurance company issuing the same.

(7) The procurement and maintenance of said policy shall in no way be construed or be deemed to relieve the Contractor from any of the obligations and risks imposed upon it by this Contract or to be a limitation on the nature or extent of such obligations and risks.

(8) Not less than thirty days prior to the expiration date or renewal date, the Contractor shall supply the Fund with an updated replacement certificate of insurance and endorsements. The Contractor shall advise the Fund of any letter or notification that cancels, materially changes, or non- renews the policy and Contractor shall require the insurance carrier(s) to copy the Fund on any letter or notification that cancels, materially changes, or non- renews the policy. Before the Contractor shall be entitled to have any progress payment rendered on account of the work which is to be insured pursuant to this Section, it shall furnish to the Fund a certificate in duplicate of the insurance herein required. Such insurance must be procured from an insurance carrier approved by the Fund, licensed to do business in the State of New York ("admitted" carrier), and rated at least "A-" by A.M. Best Company.

Section 5.08 Effect of Procurement of Insurance

Neither the procurement nor the maintenance of such insurance shall in any way affect or limit the obligations, responsibilities or liabilities of the Contractor hereunder.

Section 5.09 No Third Party Rights

Nothing in this Section or in this Agreement shall create or give to third parties, except the Dormitory Authority of the State of New York, the State of New York and the State University of New York any claim or right of action against the Contractor, the Consultant, the Fund, the Dormitory Authority of the State of New York, the State of New York and the State University of New York beyond such as may legally exist irrespective of this Section or this Agreement.

Article VI Minority and Women's Business Enterprises (MWBEs) / Equal Employment Opportunity (EEO) Provisions

Section 6.01 Definitions

The terms "Minority-owned business enterprise" ("MBE"), "Women-owned business enterprise" ("WBE") or "minority group member", and "Subcontract" shall have the same meaning as under Article 15-A of the New York State Executive Law, and 5 NYCRR Parts 140 – 145, as the same may be from time to time amended.

Section 6.02 MWBE/EEO Policy Statement

(1) The Fund recognizes the need to take affirmative action to promote the employment of minority group members and women and to ensure that Minority and Women Business Enterprises are given the opportunity to participate in the performance of its construction program. This opportunity for participation in our free enterprise system by socially and economically disadvantaged persons is essential to obtain social and economic equality and improve the functioning of the State economy. Accordingly, it is the policy of the Fund to provide for participation of minorities and women on the Project.

(2) The Contractor acknowledges its understanding of the policy herein stated and agrees to cooperate with the Fund in the implementation of this policy.

Section 6.03 Participation by Minority and Women's Business Enterprises (MWBEs)/ Equal Employment Opportunity (EEO)

(1) General Provisions

a. The Fund is required to implement the provisions of New York State Executive Law Article 15-A, 5 NYCRR Parts 140-145 of the New York Codes, Rules and Regulations ("NYCRR"), and Executive Order No. 162 dated January 9, 2017 ("E.O. 162") for all State contracts as defined therein, with a value (1) in excess of \$25,000 for labor, services, equipment, materials, or any combination of the foregoing or (2) in excess of \$100,000 for real property renovation and/or construction.

- b. The Contractor agrees, in addition to any other nondiscrimination provision of the Contract and at no additional cost to the Fund, to fully comply and cooperate with the Fund in the implementation of New York State Executive Law Article 15-A, the regulations promulgated thereunder, and E.O. 162. These requirements include equal employment opportunities for minority group members and women ("EEO") and contracting opportunities for New York State certified minority and women-owned business enterprises ("MWBEs"). Contractor's demonstration of "good faith efforts" pursuant to 5 NYCRR §142.8 shall be a part of these requirements. These provisions shall be deemed supplementary to, and not in lieu of, the nondiscrimination provisions required by New York State Executive Law Article 15 (the "Human Rights Law") and other applicable federal, state or local laws.
- c. Failure to comply with all of the requirements herein may result in a finding of non-responsiveness, non-responsibility and/or a breach of contract, leading to the assessment of liquidated damages pursuant to Section 7 of this Article, withholding of funds and such other remedies as may be available to the Fund pursuant to the Contract and applicable law, including but not limited to bid rejection or contract termination for cause.
- d. Contractor will include the provisions of this Article in each and every agreement, contract, and/or subcontract with each and every subcontractor and supplier in such a manner that the provisions of this Article will be binding upon each subcontractor and supplier as to work in connection with and related to this Agreement. All subcontractors and suppliers must be approved by the Fund and the MWBE Utilization plans are subject to approval by the Fund's Opportunities Program.

(2) Contract Goals

- a. For purposes of this Contract, the Fund hereby establishes goals of for New York State-certified Minority-Owned Business Enterprises ("MBE") participation and for New York State-certified Women-Owned Business Enterprises ("WBE") participation (collectively "MWBE Contract Goals") based on the current availability of MBEs and WBEs.

- i. The goal for Minority-Owned Business Enterprise participation shall be applied as follows: a maximum of one third (1/3) of the goal may be applied to purchases of materials, supplies, and equipment from MBEs.
- ii. The goal for Women-Owned Business Enterprise participation shall be applied as follows: a maximum of one third (1/3) of the goal may be applied to purchases of materials, supplies, and equipment from WBEs.

- b. For purposes of providing meaningful participation by MWBEs on the Contract and achieving the MWBE Contract Goals established in Section 2a hereof, Contractor should reference the Directory of New York State Certified MWBEs found at the following internet address: <https://www.ny.newnycontracts.com>.

Additionally, the Contractor is encouraged to contact the Fund's Opportunities Program Office. The Contractor can also reach out to the Division of Minority and Women's Business Development at (212) 803-2414 to discuss additional methods of maximizing participation by MWBEs on the Contract.

- c. The Contractor understands that only sums paid to MWBEs for the performance of a commercially useful function, as that term is defined in 5 NYCRR §140.1, may be applied towards the achievement of the applicable MWBE participation goal. The portion of a contract with an MWBE serving as a supplier, that shall be deemed to represent the commercially useful function performed by the MWBE, shall be 60 percent of the total value of the contract. The portion of a contract with an MWBE serving as a broker, that shall be deemed to represent the commercially useful function performed by the MWBE, shall be the monetary value for fees, or the markup percentage, charged by the MWBE.
- d. Where MWBE Contract Goals have been established herein, the Contractor must document "good faith efforts" pursuant to pursuant to 5 NYCRR §142.8, to provide meaningful participation by MWBE's as subcontractors and suppliers, in the performance of the Contract. Such

documentation shall include, but not necessarily be limited to:

- i. Evidence of outreach to MWBEs,
- ii. Any responses from MWBE's to the Contractor's outreach;
- iii. Copies of advertisements for participation by MWBEs in appropriate general circulation, trade and minority or women-owned publications;
- iv. The dates of attendance at any pre-bid, pre-award or other meetings, if any, scheduled by the Fund with MWBE's; and,
- v. Information describing specific steps undertaken by the Contractor to reasonably structure the Contract Scope of work to maximize opportunities for MWBE participation.

(3) Equal Employment Opportunity (EEO)

- a. The provisions of Article 15-A of the Executive Law, the rules and regulations promulgated thereunder, and E.O. 162 pertaining to equal employment opportunities for minority group members and women, shall apply to the Contract. Contractor agrees to be bound by them. In the event of any conflict, the provisions of the statute, regulations and Executive Order shall govern over any contrary provisions of this Agreement.
- b. In performing the Contract, the Contractor shall:
 - i. Ensure that the Contractor and each contractor and subcontractor performing work on the Contract shall undertake or continue existing EEO programs to ensure that minority group members and women are afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability or marital status. For these purposes, EEO shall apply in the areas of recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff, or termination and rates of pay or other forms of compensation.
 - ii. Within seven (7) calendar days after the opening of bids or upon receipt of a request by the Fund, the Contractor shall have

submitted an EEO policy statement to the Fund.

iii. If the Contractor or any of its sub-contractors do not have an existing EEO policy statement, the Fund may require the Contractor or subcontractor to adopt a model statement.

iv. The Contractor's EEO policy statement shall include the following language:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, age, disability or marital status, will undertake or continue existing EEO programs to ensure that minority group members and women are afforded equal employment opportunities without discrimination, and shall make and document its conscientious and active efforts to employ and utilize minority group members and women in its work force.

(b) The Contractor shall state in all solicitations or advertisements for employees that, in the performance of the Contract, all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability or marital status.

(c) At the request of the Fund, the Contractor shall request each employment agency, labor union, or authorized representative of workers with which it has a collective bargaining or other agreement or understanding, to furnish a written statement that such employment agency, labor union, or representative will not discriminate on the basis of race, creed, color, national origin, sex, age, disability or marital status and that such union or representative will affirmatively cooperate in the implementation of the Contractor's obligations herein.

(d) The Contractor will include the provisions of paragraphs a through c of this subdivision (iv) and paragraph e of this subsection 3 which provides for relevant provisions of the Human Rights Law, in every subcontract in such a manner that the requirements of the subdivision will be binding

upon each subcontractor as to work in connection with the Contract.

c. Staffing Plan

To ensure compliance with E.O.162, in connection with all low bids in excess of \$250,000, the Contractor shall, as a required condition of contract award, prepare and submit a staffing plan, as part of the Contractor's bid or proposal, or within a reasonable time after the bid opening or proposal submission and prior to final contract award, as directed by the Fund. The Contractor shall do so using the staffing plan form provided by the Fund, to document the composition of the proposed workforce to be utilized in the performance of the Contract by the specified categories listed, including ethnic background, gender, and Federal occupational categories.

d. Monthly Workforce Utilization/Gross Wages Report

i. For each and every real property renovation and/or construction contract in excess of \$100,000, the Contractor shall, during the term of the Contract and as part of the normal course of performing the work of the Contract, submit a monthly Workforce Utilization/Gross Wages Report, and shall require each of its subcontractors to submit a Workforce Utilization/Gross Wages Report in the electronic form prescribed by the Fund on a monthly basis.

ii. Separate forms shall be completed by the Contractor and any subcontractors.

iii. Pursuant to E.O.162, in addition to required Equal Employment Opportunity (EEO) information, the Contractor and its subcontractors are also required to include in such monthly reports the job titles and gross wages paid to each of their employees for the work performed by such employees on the Contract; or for each and every member of their entire workforce, if they are unable to determine which employees are working directly on the contract for which the report is submitted.

e. Contractor shall comply with the provisions of the Human Rights Law, all other State and Federal statutory and constitutional non-discrimination provisions. Contractor and

sub-contractors shall not discriminate against any employee or applicant for employment because of race, creed (religion), color, sex, national origin, sexual orientation, military status, age, disability, predisposing genetic characteristic, marital status or domestic violence victim status, and shall also follow the requirements of the Human Rights Law with regard to non-discrimination on the basis of prior criminal conviction and prior arrest.

(4) MWBE Utilization Plan

a. The Contractor represents and warrants that Contractor has submitted an MWBE Utilization Plan for the Fund's approval prior to the execution of the Contract and within seven (7) calendar days after receipt of a request thereof.

b. Contractor agrees to adhere to such MWBE Utilization Plan in the performance of the Contract.

c. Contractor further agrees that a failure to submit and/or adhere to such MWBE Utilization Plan may constitute a material breach of the terms of the Contract. Upon the occurrence of such a material breach, the Fund shall be entitled to any remedy provided herein, including but not limited to, a finding that the Contractor is non-responsive

(5) Waivers

If the Contractor, after making good faith efforts, is unable to achieve the MWBE Contract Goals stated herein, the Contractor may submit a request for a waiver through a method provided by the Fund. Such waiver request must be supported by evidence of the Contractor's good faith efforts to achieve the maximum feasible MWBE participation towards the applicable MWBE Contract Goals. If documentation included with the waiver request is completed, the Fund shall evaluate the request and issue a written notice of approval or denial within twenty (20) business days of receipt.

If the Fund, upon review of the MWBE Utilization Plan, the reports described in Section 6.04, or any other relevant information, determines that the Contractor is failing or refusing to comply with the MWBE Contract Goals, and no waiver has been issued in regards to such non-compliance, the Fund may issue a notice of deficiency to the Contractor. The Contractor must respond to the notice of deficiency within seven (7) business days of receipt. Such response may include

a request for partial or total waiver of MWBE Contract Goals.

(6) Liquidated Damages

- a. Where the Fund determines that Contractor is not in compliance with the provisions of this Article and the Contractor refuses to comply with such requirements, or if the Contractor is found to have willfully and intentionally failed to comply with the MWBE Contract Goals, Contractor shall be obligated to pay liquidated damages to the Fund.
- b. Such liquidated damages shall be calculated as an amount equaling the difference between:
 - i. All sums identified for payment to MWBEs had the Contractor achieved the contractual MWBE goals; and
 - ii. All sums actually paid to MWBEs for work performed or materials supplied under the Contract.
- c. In the event a determination has been made which requires the payment of liquidated damages and such identified sums have not been withheld by the Fund, Contractor shall pay such liquidated damages to the Fund within sixty (60) days after they are assessed. Provided, however, that if the Contractor has filed a complaint with the Director of the Division of Minority and Woman Business Development pursuant to 5 NYCRR § 142.12, liquidated damages shall be payable only in the event of a determination adverse to the Contractor following the complaint process.

Section 6.04 Reports, Records and Documentation

- a. The Contractor shall, for each and every real property renovation and/or construction contract in excess of \$100,000, file with the Fund monthly reports in the electronic form prescribed by the Fund, regarding actions taken pursuant to this Article, as well as a list of and value of subcontracts and supply contracts.
- b. The Contractor shall permit access to its books, records and accounts by the Fund for purposes of investigation to ascertain

compliance with the provisions of this Article. The Contractor shall include this provision in every subcontract so that such provision will be binding upon each subcontractor.

- c. Failure to comply with the foregoing requirements entitles the Fund to take such action as the withholding of funds, suspension or termination of the Contract or such other actions or enforcement proceedings as allowed by the Contract. Such failure may also result in a finding of non-responsiveness, non-responsibility and/or a breach of the Contract.

**Article VII
Provisions Required by Law**

Section 7.01 Provisions Deemed Inserted

Each and every provision required by law to be inserted in the Contract, including, but not limited to, the applicable provisions set forth in Schedule "A" which is attached hereto and made a part hereof, shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein and, in the event any such provision is not inserted or is not correctly inserted, then, upon the application of either party, this Contract shall forthwith be physically amended to make such insertion or correction.

Section 7.02 Wage Rates

The Contractor shall post the appropriate prevailing wage schedules in a conspicuous place at the construction site. The Department of Labor shall provide the Contractor with posters relating to prevailing wage rates and same shall be displayed by the Contractor in a conspicuous place at the construction site. The Contractor shall also distribute wallet cards, to be provided by the Department of Labor, to all workers engaged at the construction site containing information relating to wage rates and telephone numbers to call if a worker believes his or her rights are being violated. The Contractor shall provide each worker with a written notice, informing them of the applicable prevailing wage requirements, and the Contractor must obtain a signed statement or declaration from such worker attesting to the fact that he or she has been given this information. Further, the Contractor is required to keep certified copies of its payrolls at the construction site.

Section 7.03 Iran Energy Sector Divestment

Pursuant to New York State Finance Law §165-a, Iran Divestment Act of 2012 (Act), the Office of General Services is required to post on its website a list of persons who have been determined to engage in investment activities in Iran ("prohibited entities list"), as defined by the Act. New York State Public Authorities Law § 2879-c, with certain exceptions, prohibits the Fund from entering into or awarding a Contract with persons identified on the prohibited entities list and requires that the person (as defined in paragraph (e) of subdivision one of Section 165-a of the State finance law) entering into the contract with the Fund certify, under penalty of perjury, that it is not on the prohibited entities list. By signing this Agreement with the Fund, each person (as defined in paragraph (e) of subdivision one of Section 165-a of the State finance law) and each person signing on behalf of any other party certifies, and in the case of a joint bid or partnership each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each person is not on the prohibited entities list.

Article VIII Vendor Responsibility

(1) The Contractor shall at all times during the Agreement term remain responsible. The Contractor shall provide the Fund with written notice as required by this Article of any issues impacting its responsibility, which shall minimally include updated responses to the its filed vendor responsibility questionnaire. The Contractor agrees, if requested by the Fund, to present evidence of its continuing legal authority to do business in New York State, integrity, experience, ability, prior performance and organizational and financial capacity.

(2) The Fund, at its sole discretion, reserves the right to suspend any or all activities under this Agreement, at any time, when the Fund discovers information that calls into question the responsibility of the Contractor. In the event of such suspension, the Contractor will be given written notice outlining the particulars of such suspension. Upon issuance of such notice, the Contractor must comply with the terms of the suspension order. Agreement activity may resume at such time as the Fund issues a written notice authorizing a resumption of performance under the Agreement.

(3) Upon written notice to the Contractor, and a reasonable opportunity to be heard with appropriate Fund officials or staff, the Contractor may be

terminated by the Fund at the Contractor's expense where the Contractor is determined by the Fund to be non-responsible. In such event, the Fund may complete the contractual requirements in any manner that the Fund may deem advisable and pursue available legal or equitable remedies for breach.

(4) In addition to the notice requirements set forth in Section 1.12 of this Agreement, the Contractor shall provide the notice required by this section as follows:

The State University Construction Fund

Attention: General Counsel

The H. Carl McCall SUNY Building

353 Broadway, Albany, NY 12246

Telephone Number: (518) 320-1748

E-mail address: Harry.McLellan@suny.edu

In no case shall termination of the Contract by the Fund be deemed a breach by the Fund thereof, nor shall the Fund be liable for any damages or lost profits or otherwise, which may be sustained by Contractor as a result of such termination.

Article IX Use of Service-Disabled Veteran-Owned Business Enterprises in Contract Performance

(1) Article 17-B of New York State Executive Law acknowledges that Service-Disabled Veteran-Owned Businesses (SDVOBs) strongly contribute to the economies of the State and the nation. As defenders of our nation and in recognition of their economic activity in doing business in New York State, the Contractor for the Project and Work defined in this Agreement, agrees to, at no additional cost to the Fund, fully comply and cooperate with the Fund's implementation of New York State Executive Law Article 17-B and provide opportunities for SDVOBs in the fulfillment of the requirements of this Agreement. SDVOBs can be readily identified on the directory of certified businesses at:

<https://ogs.ny.gov/Veterans/#1>

(2) The Contractor is strongly encouraged to the maximum extent practical and consistent with legal requirements of the State Finance Law and the Executive Law to use responsible and responsive SDVOBs in purchasing and utilizing commodities, services and technology that are of equal quality and functionality to those that may be obtained from non-SDVOBs. Furthermore, Contractors are reminded that they must continue to utilize small, minority and women-owned businesses consistent with current State law

(3) Utilizing SDVOBs in State contracts will help create more private sector jobs, rebuild New York State's infrastructure, and maximize economic activity to the mutual benefit of the Contractor and its SDVOB partners. SDVOBs will promote the Contractor's optimal performance under the Agreement, thereby fully benefiting the public sector programs that are supported by associated public procurements.

(4) Public procurements can drive and improve the State's economic engine through promotion of the use of SDVOBs by the Manager. The Fund, therefore, expects Contractors to provide maximum assistance to SDVOBs in the performance of services for this Agreement. The potential participation by all kinds of SDVOBs will deliver great value to the State and its taxpayers.

(5) For the purposes of this Agreement, the Fund hereby establishes the goal of participation for SDVOBs. For the purposes of providing meaningful participation by SDVOBs on the Agreement and achieving the Agreement Goal, the Contractor should reference the directory of New York State Certified SDVOBs at the following internet address:

<https://ogs.ny.gov/Veterans/#1>

(6) Damages – SDVOB Participation: Any Contractor who willfully and intentionally fails to comply with the SDVOB participation requirements of the SDVOB regulations set forth in 9 NYCRR Section 252, and as set forth in this Agreement, shall be liable to the Fund for damages as otherwise specified in this agreement, and shall provide for other appropriate remedies on account of such breach. Damages shall be calculated based on the actual cost incurred by the Fund related to the Fund's expenses for personnel, supplies and overhead related to establishing, monitoring and reviewing certified SDVOB enterprise programmatic goals.

(7) The Contractor is required to submit a Compliance Report to the Fund in every application for payment or by request of the Fund and such report must document the progress made towards achievement of the SDVOB goal of the Agreement.

Article X Requirement for Office of State Comptroller Review

In accordance with the Memorandum of Understanding (MOU) dated as of August 15, 2019 by and between the Governor, the Office of State

Comptroller (State Comptroller), the Fund and other entities, it was agreed that certain Fund contracts (Covered Contracts) are subject to review by the State Comptroller.

As such a Covered Contract, the State shall have no liability under this Agreement and this Agreement is not valid, effective or binding until it has been approved by the State Comptroller and filed in his or her office; provided however that if the State Comptroller does not approve or reject this Agreement within the time period specified in the MOU, then this Agreement shall be valid and enforceable without such approval.

IN WITNESS WHEREOF, the parties hereto have
executed this Agreement as of the day and year first
above written.

STATE UNIVERSITY CONSTRUCTION FUND

By _____
General Manager
Robert M. Haelen

«Company_Name»

By _____

Date: _____

If Corporation, affix Corporate Seal

SUCF Project No.

Contract No.

ACKNOWLEDGMENTS

(ACKNOWLEDGMENT BY INDIVIDUAL)

STATE OF NEW YORK)
COUNTY OF) SS:

On this _____ day of _____, 20____, before me personally came
_____, to me known and known to me to be the
person described in and who executed the foregoing instrument and he acknowledged to me that he executed the same.

Notary Public

(ACKNOWLEDGMENT BY PARTNERSHIP)

STATE OF NEW YORK)
COUNTY OF) SS:

On this _____ day of _____, 20____, before me personally came
_____, to me known and known to me to be the
person who executed the above instrument, who, being duly sworn by me, did for himself depose and say that he is a
member of the firm of _____ consisting of himself and

that he executed the foregoing instrument in the firm name of _____

and that he had authority to sign same, and he did duly acknowledge to me that he executed the same as the act and deed

of said firm of _____, for the uses and purposes mentioned therein.

Notary Public

(ACKNOWLEDGEMENT BY CORPORATION)

STATE OF NEW YORK)
COUNTY OF) SS:

On this _____ day of _____, 20____, before me personally came
_____, to me known, who, being by me duly sworn, did depose
and say that he/she/they reside(s) in _____; that he/she/they is (are) the
_____ (president or other officer or director or attorney in fact duly appointed) of the
_____ (name of corporation), the corporation described in and which executed
the above instrument; and that he/she/they signed his/her/their name(s) thereto by authority of the board of directors of said
corporation.

Notary Public

Appendix “A”

Standard Clauses For New York State Contracts

The parties to the attached contract, license, lease, amendment or other agreement of any kind (hereinafter, "the contract" or "this contract") agree to be bound by the following clauses which are hereby made a part of the contract (the word "Contractor" herein refers to any party other than the State, whether a contractor, licensor, licensee, lessor, lessee or any other party; the word "State" herein refers to the State of New York and/or the State University Construction Fund "Fund"):

1. EXECUTORY CLAUSE. In accordance with Section 41 of the State Finance Law, the State shall have no liability under this contract to the Contractor or to anyone else beyond funds appropriated and available for this contract.

2. NON-ASSIGNMENT CLAUSE. In accordance with Section 138 of the State Finance Law, this contract may not be assigned by the Contractor or its right, title or interest therein assigned, transferred, conveyed, sublet or otherwise disposed of without the State's previous written consent, and attempts to do so are null and void. Notwithstanding the foregoing, such prior written consent of an assignment of a contract let pursuant to Article XI of the State Finance Law may be waived at the discretion of the Fund and with the concurrence of the State Comptroller where the original contract was subject to the State Comptroller's approval, where the assignment is due to a reorganization, merger or consolidation of the Contractor's business entity or enterprise. The State retains its right to approve an assignment and to require that any Contractor demonstrate its responsibility to do business with the State. The Contractor may, however, assign its right to receive payments without the State's prior written consent unless this contract concerns Certificates of Participation pursuant to Article 5-A of the State Finance Law.

3. COMPTROLLER'S APPROVAL. In accordance with the Memorandum of Understanding dated as of August 15, 2019 by and between the Governor, the Office of State Comptroller ("State Comptroller"), the Fund and other entities, providing for State Comptroller review of certain contracts, any such covered contracts shall not be valid, effective or binding upon the State until either such contract has been approved by the State Comptroller or the allowed time period has passed without State Comptroller approval or rejection and such contracts are filed in his or her office.

4. WORKERS' COMPENSATION BENEFITS. In accordance with Section 142 of the State Finance Law, this contract shall be void and of no force and effect unless the Contractor shall provide and maintain coverage during the life of this contract for the benefit of such employees as are required to be covered by the provisions of the Workers' Compensation Law.

5. NON-DISCRIMINATION REQUIREMENTS. To the extent required by Article 15 of the Executive Law (also known as the Human Rights Law) and all other State and Federal statutory and constitutional non-discrimination provisions, the Contractor will not discriminate against any employee or applicant for employment, nor subject any individual to harassment, because of age, race, creed, color, national origin, sexual orientation, gender identity or expression, military status, sex, disability, predisposing genetic characteristics, familial status, marital status, or domestic violence victim status or because the individual has opposed any practices forbidden under the Human Rights Law or has filed a complaint, testified, or assisted in any proceeding under the Human Rights Law. Furthermore, in accordance with Section 220-e of the Labor Law, if this is a contract for the construction, alteration or repair of any public building or public work or for the manufacture, sale or distribution of materials, equipment or supplies, and to the extent that this contract shall be performed within the State of New York, Contractor agrees that neither it nor its subcontractors shall, by reason of race, creed, color, disability, sex, or national origin: (a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this contract. If this is a building service contract as defined in Section 230 of the Labor Law, then, in accordance with Section 239 thereof, Contractor agrees that neither it nor its subcontractors shall by reason of race, creed, color, national origin, age, sex or disability: (a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this contract. Contractor is subject to fines of \$50.00 per person per day for any violation of Section 220-e or Section 239 as well as possible termination of this contract and forfeiture of all moneys due hereunder for a second or subsequent violation.

6. WAGE AND HOURS PROVISIONS. If this is a public work contract covered by Article 8 of the Labor Law or a building service contract covered by Article 9 thereof, neither Contractor's employees nor the employees of its subcontractors may be required or permitted to work more than the number of hours or days stated in said statutes, except as otherwise provided in the Labor Law and as set forth in prevailing wage and supplement schedules issued by the State Labor Department. Furthermore, Contractor and its subcontractors must pay at least the prevailing wage rate and pay or provide the prevailing supplements, including the premium rates for overtime pay, as determined by the State Labor Department in accordance with the Labor Law. Additionally, effective April 28, 2008, if this is a public work contract covered by Article 8 of the Labor Law, the Contractor understands and agrees that the filing of payrolls in a manner consistent with Subdivision 3-a of Section 220 of the Labor Law shall be a condition precedent to payment by the State of any State approved sums due and owing for work done upon the project.

7. NON-COLLUSIVE BIDDING CERTIFICATION. In accordance with Section 139-d of the State Finance Law, if this contract was awarded based upon the submission of bids, Contractor affirms, under penalty of perjury, that its bid was arrived at independently and without collusion aimed at restricting competition. Contractor further affirms that, at the time Contractor submitted its bid, an authorized and responsible person executed and delivered to the State a non-collusive bidding certification on Contractor's behalf.

8. INTERNATIONAL BOYCOTT PROHIBITION. In accordance with Section 220-f of the Labor Law and Section 139-h of the State Finance Law, if this contract exceeds \$5,000, the Contractor agrees, as a material condition of the contract, that neither the Contractor nor any substantially owned or affiliated person, firm, partnership or corporation has participated, is participating, or shall participate in an international boycott in violation of the federal Export Administration Act of 1979 (50 USC App. Sections 2401 et seq.) or regulations thereunder. If such Contractor, or any of the aforesaid affiliates of Contractor, is convicted or is otherwise found to have violated said laws or regulations upon the final determination of the United States Commerce Department or any other appropriate agency of the United States subsequent to the contract's execution, such contract, amendment or modification thereto shall be rendered forfeit and void. The Contractor shall so notify the State Comptroller within five (5) business days of such conviction, determination or disposition of appeal (2 NYCRR § 105.4).

9. SET-OFF RIGHTS. The State and the Fund shall have rights of set-off. These rights shall include, but not be limited to, the option to withhold for the purposes of set-off any moneys due to the Contractor under this contract up to any amounts due and owing to the State or the Fund with regard to this contract or any other Fund contract, as well as any other contract with any State department or agency, including any contract for a term commencing prior to the term of this contract, plus any amounts due and owing to the State or the Fund for any other reason including, without limitation, tax delinquencies, fee delinquencies or monetary penalties, adjustments, fees or claims for damages. The State and the Fund shall exercise its set-off rights in accordance with normal State practices including, in cases of set-off pursuant to an audit, the finalization of such audit by the State, the Fund its representatives, or the State Comptroller.

10. RECORDS. The Contractor shall establish and maintain complete and accurate books, records, documents, accounts and other evidence directly pertinent to performance under this contract (hereinafter, collectively, the "Records"). The Records must be kept for the balance of the calendar year in which they were made and for six (6) additional years thereafter. The State Comptroller, the Attorney General and any other person or entity authorized to conduct an examination, as well as the Fund, shall have access to the Records during normal business hours at an office of the Contractor within the State of New York or, if no such office is available, at a mutually agreeable and reasonable venue within the State, for the term specified above for the purposes of inspection, auditing and copying. The State shall take reasonable steps to protect from public disclosure any of the Records which are exempt from disclosure under Section 87 of the Public Officers Law (the "Statute") provided that: (i) the Contractor shall timely inform an appropriate State official, in writing, that said records should not be disclosed; and (ii) said records shall be sufficiently identified; and (iii) designation of said records as exempt under the Statute is reasonable. Nothing contained herein shall diminish, or in any way adversely affect, the State's or the Fund's right to discovery in any pending or future litigation.

11. IDENTIFYING INFORMATION AND PRIVACY NOTIFICATION. (a) Identification Number(s). Every invoice or New York State Claim for Payment submitted to the Fund by a payee, for payment for the sale of goods or services or for transactions (e.g., leases, easements, licenses, etc.) related to real or personal property must include the payee's identification number. The number is any or all of the

following: (i) the payee's Federal employer identification number, (ii) the payee's Federal social security number, and/or (iii) the payee's Vendor Identification Number assigned by the Statewide Financial System. Failure to include such number or numbers may delay payment. Where the payee does not have such number or numbers, the payee, on its invoice or Claim for Payment, must give the reason or reasons why the payee does not have such number or numbers.

(b) Privacy Notification. (1) The authority to request the above personal information from a seller of goods or services or a lessor of real or personal property, and the authority to maintain such information, is found in Section 5 of the State Tax Law. Disclosure of this information by the seller or lessor to the State is mandatory. The principal purpose for which the information is collected is to enable the State to identify individuals, businesses and others who have been delinquent in filing tax returns or may have understated their tax liabilities and to generally identify persons affected by the taxes administered by the Commissioner of Taxation and Finance. The information will be used for tax administration purposes and for any other purpose authorized by law. (2) The personal information is requested by the Fund to purchase the goods or services or lease the real or personal property covered by this contract or lease. The information is maintained in the Statewide Financial System by the Vendor Management Unit within the Bureau of State Expenditures, Office of the State Comptroller, 110 State Street, Albany, New York 12236.

12. EQUAL EMPLOYMENT OPPORTUNITIES FOR MINORITIES AND WOMEN. In accordance with Section 312 of the Executive Law and 5 NYCRR Part 143, if this contract is: (i) a written agreement or purchase order instrument, providing for a total expenditure in excess of \$25,000.00, whereby a contracting agency is committed to expend or does expend funds in return for labor, services, supplies, equipment, materials or any combination of the foregoing, to be performed for, or rendered or furnished to the Fund; or (ii) a written agreement in excess of \$100,000.00 whereby the Fund is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon; or (iii) a written agreement in excess of \$100,000.00 whereby the owner of a State assisted housing project is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon for such project, then the following shall apply and by signing

this agreement the Contractor certifies and affirms that it is Contractor's equal employment opportunity policy that:

(a) The Contractor will not discriminate against employees or applicants for employment because of race, creed, color, national origin, sex, age, disability or marital status, shall make and document its conscientious and active efforts to employ and utilize minority group members and women in its work force on State contracts and will undertake or continue existing programs of affirmative action to ensure that minority group members and women are afforded equal employment opportunities without discrimination. Affirmative action shall mean recruitment, employment, job assignment, promotion, upgradings, demotion, transfer, layoff, or termination and rates of pay or other forms of compensation;

(b) at the request of the Fund, the Contractor shall request each employment agency, labor union, or authorized representative of workers with which it has a collective bargaining or other agreement or understanding, to furnish a written statement that such employment agency, labor union or representative will not discriminate on the basis of race, creed, color, national origin, sex, age, disability or marital status and that such union or representative will affirmatively cooperate in the implementation of the Contractor's obligations herein; and

(c) the Contractor shall state, in all solicitations or advertisements for employees, that, in the performance of the State contract, all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability or marital status.

Contractor will include the provisions of "a," "b," and "c" above, in every subcontract over \$25,000.00 for the construction, demolition, replacement, major repair, renovation, planning or design of real property and improvements thereon (the "Work") except where the Work is for the beneficial use of the Contractor. Section 312 does not apply to: (i) work, goods or services unrelated to this contract; or (ii) employment outside New York State. The State shall consider compliance by a contractor or subcontractor with the requirements of any federal law concerning equal employment opportunity which effectuates the purpose of this clause. The Fund shall determine whether the imposition of the requirements of the provisions hereof duplicate or conflict with any such federal law and if such duplication or conflict exists, the Fund shall waive the applicability of Section 312 to the extent of such duplication or conflict.

Contractor will comply with all duly promulgated and lawful rules and regulations of the Department of Economic Development's Division of Minority and Women's Business Development pertaining hereto.

13. CONFLICTING TERMS. In the event of a conflict between the terms of the contract (including any and all attachments thereto and amendments thereof) and the terms of this Appendix A, the terms of this Appendix A shall control.

14. GOVERNING LAW. This contract shall be governed by the laws of the State of New York except where the Federal supremacy clause requires otherwise.

15. LATE PAYMENT. Timeliness of payment and any interest to be paid to Contractor for late payment shall be governed by Article 11-A of the State Finance Law to the extent required by law. For the purposes of Article 11-A of the State Finance law, the Controller's Office of the State University Construction Fund, whose mailing address is the H. Carl McCall SUNY Building, 353 Broadway, Albany, New York 12246, is the Fund's designated payment office.

16. NO ARBITRATION. Disputes involving this contract, including the breach or alleged breach thereof, may not be submitted to binding arbitration (except where statutorily authorized), but must, instead, be heard in a court of competent jurisdiction of the State of New York.

17. SERVICE OF PROCESS. In addition to the methods of service allowed by the State Civil Practice Law & Rules ("CPLR"), Contractor hereby consents to service of process upon it by registered or certified mail, return receipt requested. Service hereunder shall be complete upon Contractor's actual receipt of process or upon the Fund's receipt of the return thereof by the United States Postal Service as refused or undeliverable. Contractor must promptly notify the Fund, in writing, of each and every change of address to which service of process can be made. Service by the Fund to the last known address shall be sufficient. Contractor will have thirty (30) calendar days after service hereunder is complete in which to respond.

18. PROHIBITION ON PURCHASE OF TROPICAL HARDWOODS. The Contractor certifies and warrants that all wood products to be used under this contract award will be in accordance with, but not limited to, the specifications and provisions of Section 165 of the State Finance Law, (Use of Tropical Hardwoods) which prohibits purchase and use of

tropical hardwoods, unless specifically exempted, by the State or any governmental agency or political subdivision or public benefit corporation. Qualification for an exemption under this law will be the responsibility of the contractor to establish to meet with the approval of the State.

In addition, when any portion of this contract involving the use of woods, whether supply or installation, is to be performed by any subcontractor, the prime Contractor will indicate and certify in the submitted bid proposal that the subcontractor has been informed and is in compliance with specifications and provisions regarding use of tropical hardwoods as detailed in § 165 State Finance Law. Any such use must meet with the approval of the State; otherwise, the bid may not be considered responsive. Under bidder certifications, proof of qualification for exemption will be the responsibility of the Contractor to meet with the approval of the State.

19. MACBRIDE FAIR EMPLOYMENT PRINCIPLES. In accordance with the MacBride Fair Employment Principles (Chapter 807 of the Laws of 1992), the Contractor hereby stipulates that the Contractor either (a) has no business operations in Northern Ireland, or (b) shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles (as described in Section 165 of the New York State Finance Law), and shall permit independent monitoring of compliance with such principles.

20. OMNIBUS PROCUREMENT ACT OF 1992. It is the policy of New York State to maximize opportunities for the participation of New York State business enterprises, including minority- and women-owned business enterprises as bidders, subcontractors and suppliers on its procurement contracts.

Information on the availability of New York State subcontractors and suppliers is available from:

NYS Department of Economic Development
Division for Small Business
Albany, New York 12245
Telephone: 518-292-5100
Fax: 518-292-5884
email: opa@esd.ny.gov

A directory of certified minority- and women-owned business enterprises is available from:

NYS Department of Economic Development

Division of Minority and Women's Business
Development
633 Third Avenue
New York, NY 10017
212-803-2414

email: mwb certification@esd.ny.gov
[https://ny.newnycontracts.com/FrontEnd/Vendor
SearchPublic.asp](https://ny.newnycontracts.com/FrontEnd/VendorSearchPublic.asp)

The Omnibus Procurement Act of 1992 (Chapter 844 of the Laws of 1992, codified in State Finance Law § 139-i and Public Authorities Law § 2879(3)(n)-(p)) requires that by signing this bid proposal or contract, as applicable, Contractors certify that whenever the total bid amount is greater than \$1 million:

(a) The Contractor has made reasonable efforts to encourage the participation of New York State Business Enterprises as suppliers and subcontractors, including certified minority- and women-owned business enterprises, on this project, and has retained the documentation of these efforts to be provided upon request to the State;

(b) The Contractor has complied with the Federal Equal Opportunity Act of 1972 (P.L. 92-261), as amended;

(c) The Contractor agrees to make reasonable efforts to provide notification to New York State residents of employment opportunities on this project through listing any such positions with the Job Service Division of the New York State Department of Labor, or providing such notification in such manner as is consistent with existing collective bargaining contracts or agreements. The Contractor agrees to document these efforts and to provide said documentation to the State upon request; and

(d) The Contractor acknowledges notice that the State may seek to obtain offset credits from foreign countries as a result of this contract and agrees to cooperate with the State in these efforts.

21. RECIPROCITY AND SANCTIONS PROVISIONS. Bidders are hereby notified that if their principal place of business is located in a country, nation, province, state or political subdivision that penalizes New York State vendors, and if the goods or services they offer will be substantially produced or performed outside New York State, the Omnibus Procurement Act 1994 and 2000 amendments (Chapter 684 and Chapter 383, respectively, codified in State Finance Law § 165(6) and Public Authorities Law § 2879(5))) require that they be denied contracts which they would otherwise obtain. NOTE: As of October 2019, the list of

discriminatory jurisdictions subject to this provision includes the states of South Carolina, Alaska, West Virginia, Wyoming, Louisiana and Hawaii.

22. COMPLIANCE WITH BREACH NOTIFICATION AND DATA SECURITY LAWS. Contractor shall comply with the provisions of the New York State Information Security Breach and Notification Act (General Business Law § 899-aa and State Technology Law § 208) and commencing March 21, 2020 shall also comply with General Business Law § 899-bb.

23. COMPLIANCE WITH CONSULTANT DISCLOSURE LAW. If this is a contract for consulting services, defined for purposes of this requirement to include analysis, evaluation, research, training, data processing, computer programming, engineering, environmental, health, and mental health services, accounting, auditing, paralegal, legal or similar services, then, in accordance with Section 163 (4)(g) of the State Finance Law (as amended by Chapter 10 of the Laws of 2006), the Contractor shall timely, accurately and properly comply with the requirement to submit an annual employment report for the contract to the Fund, the Department of Civil Service and the State Comptroller.

24. PROCUREMENT LOBBYING. To the extent this agreement is a "procurement contract" as defined by State Finance Law §§ 139-j and 139-k, by signing this agreement the contractor certifies and affirms that all disclosures made in accordance with State Finance Law §§ 139-j and 139-k are complete, true and accurate. In the event such certification is found to be intentionally false or intentionally incomplete, the Fund may terminate the agreement by providing written notification to the Contractor in accordance with the terms of the agreement.

25. CERTIFICATION OF REGISTRATION TO COLLECT SALES AND COMPENSATING USE TAX BY CERTAIN STATE CONTRACTORS, AFFILIATES AND SUBCONTRACTORS.

To the extent this agreement is a contract as defined by Tax Law § 5-a, if the contractor fails to make the certification required by Tax Law § 5-a or if during the term of the contract, the Department of Taxation and Finance or the covered agency, as defined by Tax Law § 5-a, discovers that the certification, made under penalty of perjury, is false, then such failure to file or false certification shall be a material breach of this contract and this contract may be terminated, by providing written notification to the Contractor in accordance with the terms of the agreement, if the covered agency determines that such action is in the best interest of the State.

26. IRAN DIVESTMENT ACT. By entering into this Agreement, Contractor certifies in accordance with State Finance Law § 165-a that it is not on the “Entities Determined to be Non-Responsive Bidders/Offerers pursuant to the New York State Iran Divestment Act of 2012” (“Prohibited Entities List”) posted at: <https://ogs.ny.gov/list-entities-determined-be-non-responsive-biddersofferers-pursuant-nys-iran-divestment-act-2012>

Contractor further certifies that it will not utilize on this Contract any subcontractor that is identified on the Prohibited Entities List. Contractor agrees that should it seek to renew or extend this Contract, it must provide the same certification at the time the Contract is renewed or extended. Contractor also agrees that any proposed Assignee of this Contract will be required to certify that it is not on the Prohibited Entities List before the contract assignment will be approved by the State.

During the term of the Contract, should the Fund receive information that a person (as defined in State Finance Law § 165-a) is in violation of the above-referenced certifications, the Fund will review such information and offer the person an opportunity to respond. If the person fails to demonstrate that it has ceased its engagement in the investment activity which is in violation of the Act within 90 days after the determination of such violation, then the Fund shall take such action as may be appropriate and provided for by law, rule, or contract, including, but not limited to, imposing sanctions, seeking compliance, recovering damages, or declaring the Contractor in default.

27. ADMISSIBILITY OF REPRODUCTION OF CONTRACT. Notwithstanding the best evidence rule or any other legal principle or rule of evidence to the contrary, the Contractor acknowledges and agrees that it waives any and all objections to the admissibility into evidence at any court proceeding or to the use at any examination before trial of an electronic reproduction of this contract, in the form approved by the State Comptroller, if such approval was required, regardless of whether the original of said contract is in existence.

SCHEDULE I Unit Prices

Refer to Section 4.04 of the Agreement for additional information.

<u>Work or Material Description</u>	<u>Amount in Words</u>	<u>Amount in Figures</u>
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SCHEDULE II Allowance(s)

Refer to Section 4.05 of the Agreement for additional information. The amount(s) indicated below shall be included in the Total Bid amount and their total indicated on the Proposal in the space provided.

<u>Work or Material Description</u>	<u>Amount in Words</u>	<u>Amount in Figures</u>
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SCHEDULE III Field Order Allowance

Refer to Section 4.05A of the Agreement for additional information. The amount indicated below shall be included in the Total Bid amount and indicated on the Proposal in the space provided.

(in words)

(in figures)

LABOR AND MATERIAL BOND

KNOW ALL PERSONS BY THESE PRESENTS, that

(hereinafter called the "Principal") and

(hereinafter called the "Surety") are held and firmly bound to the State University Construction Fund (hereinafter called the "Fund") in the full and just sum of

dollars (\$)

good and lawful money of the United States of America, for the payment of which sum of money, well and truly to be made and done, the Principal binds itself, its heirs, executors, administrators, successors and assigns and the Surety binds itself, its successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract bearing date on the

day of , 20 ,

with the Fund for the

a copy of which Contract is annexed to and hereby made a part of this Bond as though herein set forth in full; and

WHEREAS, the Fund has required this Bond guaranteeing prompt payment of monies due to all persons furnishing the Principal or any subcontractor of the Principal with labor or materials in the prosecution of the work provided in such Contract;

NOW, THEREFORE, the conditions of this obligation are such that if the Principal shall

promptly pay all monies due to all persons furnishing the

Principal or any subcontractor of the Principal with labor or materials in the prosecution of the Contract, then this obligation shall be null and void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, the said Surety, for value received, hereby stipulates and agrees that no change, extension, alteration or addition to the terms of the said Contract or Specifications accompanying the same, shall in any way affect its obligations under this Bond, and it does hereby waive notice of any such change, extension, alteration or addition; and further.

PROVIDED, HOWEVER, the place of trial of any action on this Bond shall be in the county in which the said Contract was to be performed, or if said Contract was to be performed in more than one county, then in any such county, and not elsewhere; and further

PROVIDED, HOWEVER, this Bond shall be enforceable in accordance with the terms and provisions of Section 137 of the State Finance Law.

IN WITNESS WHEREOF, the Principal has hereunto set its hand and seal and the Surety has caused this instrument to be signed by its attorney-in-fact and its corporate seal to be hereto affixed this

day of , 20 .

Principal

By _____

(If Corporation, affix corporate seal)

Surety

By _____

(If Corporation, affix corporate seal)

PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS, that

(hereinafter called the "Principal") and

(hereinafter called the "Surety") are held and firmly bound to the State University Construction Fund (hereinafter called the "Fund") in the full and just sum of

dollars (\$)

good and lawful money of the United States of America, for the payment of which sum of money, well and truly to be made and done, the Principal binds itself, its heirs, executors, administrators, successors and assigns and the Surety binds itself, its successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract bearing date on the day of , 20 , with the Fund for the

a copy of which Contract is annexed to and hereby made part of this Bond as though herein set forth in full; and

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, its representatives or assigns, shall well and faithfully comply with and perform all the terms, covenants and conditions of said Contract on its part to be kept and performed and all modifications, amendments, additions and alterations thereto that may hereafter be made, according to the true intent and meaning of said Contract, including repair and/or replacement of defective work and guarantees of maintenance for the periods stated in the Contract, and shall fully indemnify and save harmless the Fund from all cost and damage which it may suffer by reason of failure to do so, and shall fully reimburse and repay the Fund for all outlay and expense which the Fund may incur in making good any such default, and shall protect the said Fund against, and pay any and all amounts, damages, costs and judgments which may or shall be recovered against said Fund or its trustees, officers, agents or employees or which the said Fund may be called upon to pay to any person or corporation by reason of any damages arising or growing out of the doing of said work, or the repair of maintenance thereof, or the manner of doing the same, or the neglect of the said Principal, or its agents, or the improper performance of the said work by the said Principal, or its agents, or the infringement of any patent or patent rights by reason of the use of any materials furnished or

work done as aforesaid or otherwise, then this obligation shall be null and void, otherwise to remain in full force and effect;

PROVIDED, HOWEVER, the said Surety, for value received, hereby stipulates and agrees, if requested to do so by the Fund, to fully perform and complete the work mentioned and described in said Contract, pursuant to the terms, conditions, and covenants thereof, if for any cause the Principal fails or neglects to so fully perform and complete such work and the Surety further agrees to commence such work of completion within ten (10) calendar days after written notice thereof from the Fund and to complete such work within 10 (10) calendar days from the expiration of the time allowed the Principal in the Contract for the completion thereof; and further

PROVIDED, HOWEVER, the Surety, for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety and its Bond shall be in no way impaired or affected by an extension of time, modification, omission, addition, or change in or to the said Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer of any work to be performed or any monies due or to become due thereunder or by the Fund's takeover, use, occupancy or operation of any part or all of the work covered by the Contract; and said Surety does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts, transfers, takeovers, uses, occupancies or operations, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, subcontractors, and other transferees shall have the same effect as to said Surety as though done or omitted to be done by or in relation to said Principal.

IN WITNESS WHEREOF, the Principal has hereunto set its hand and seal and the Surety has caused this instrument to be signed by its attorney-in-fact, and its corporate seal to be hereunto affixed this day of , 20 .

Principal

By _____

(If Corporation, affix corporate seal)

Surety

By _____

(If Corporation, affix corporate seal)

ACKNOWLEDGMENTS FOR BONDS

(ACKNOWLEDGMENT BY PRINCIPAL, UNLESS IT BE A CORPORATION)

STATE OF)
) ss.:
COUNTY OF)

On this _____ day of _____, 20_____, before me personally came

_____, to me known and known to me to be the person(s)
described in and who executed the foregoing instrument and acknowledged that he executed the same.

Notary Public

(ACKNOWLEDGMENT BY PRINCIPAL, IF A CORPORATION)

STATE OF)
) ss.:
COUNTY OF)

On this _____ day of _____, 20_____, before me personally came

_____, to me known who, being by me

duly sworn, did depose and say that he resides in _____;

that he is the _____ of the

_____, the corporation described in and
which executed the foregoing instrument; that he knows the seal of said corporation; that the seal affixed to said
instrument is such corporate seal; that is was so affixed by order of the Board of Directors of said corporation and that he
signed h name thereto by like order.

Notary Public

(ACKNOWLEDGMENT BY SURETY COMPANY)

STATE OF)
) ss.:
COUNTY OF)

On this _____ day of _____, 20_____, before me personally came

_____, to me known who, being by me

duly sworn, did depose and say that he resides in _____;

that he is the _____ of the _____,
the corporation described in and which executed the foregoing instrument; that he knows the seal of said
corporation; that the seal affixed to said instrument is such corporate seal; that is was so affixed by order of the Board of
Directors of said corporation and that he signed h name thereto by like order; and that the liabilities of said
company do not exceed its assets as ascertained in the manner provided by the laws of the State of New York.

Notary Public



Kathy Hochul, Governor

Roberta Reardon, Commissioner

SUCF

JOHN O'CONNOR
307 SEVENTH AVENUE, 1501
NEW YORK NY 10001

Schedule Year 2021 through 2022
Date Requested 11/09/2021
PRC# 2021011641

Location New Paltz
Project ID# 081058
Project Type Modernization of eleven (11) elevators at six (6) buildings at the SUNY New Paltz campus.

PREVAILING WAGE SCHEDULE FOR ARTICLE 8 PUBLIC WORK PROJECT

Attached is the current schedule(s) of the prevailing wage rates and prevailing hourly supplements for the project referenced above. A unique Prevailing Wage Case Number (PRC#) has been assigned to the schedule(s) for your project.

The schedule is effective from July 2021 through June 2022. All updates, corrections, posted on the 1st business day of each month, and future copies of the annual determination are available on the Department's website www.labor.ny.gov. Updated PDF copies of your schedule can be accessed by entering your assigned PRC# at the proper location on the website.

It is the responsibility of the contracting agency or its agent to annex and make part, the attached schedule, to the specifications for this project, when it is advertised for bids and /or to forward said schedules to the successful bidder(s), immediately upon receipt, in order to insure the proper payment of wages.

Please refer to the "General Provisions of Laws Covering Workers on Public Work Contracts" provided with this schedule, for the specific details relating to other responsibilities of the Department of Jurisdiction.

Upon completion or cancellation of this project, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

NOTICE OF COMPLETION / CANCELLATION OF PROJECT

Date Completed: _____ Date Cancelled: _____

Name & Title of Representative: _____

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12240

General Provisions of Laws Covering Workers on Article 8 Public Work Contracts

Introduction

The Labor Law requires public work contractors and subcontractors to pay laborers, workers, or mechanics employed in the performance of a public work contract not less than the prevailing rate of wage and supplements (fringe benefits) in the locality where the work is performed.

Responsibilities of the Department of Jurisdiction

A Department of Jurisdiction (Contracting Agency) includes a state department, agency, board or commission; a county, city, town or village; a school district, board of education or board of cooperative educational services; a sewer, water, fire, improvement and other district corporation; a public benefit corporation; and a public authority awarding a public work contract.

The Department of Jurisdiction (Contracting Agency) awarding a public work contract MUST obtain a Prevailing Rate Schedule listing the hourly rates of wages and supplements due the workers to be employed on a public work project. This schedule may be obtained by completing and forwarding a "Request for wage and Supplement Information" form (PW 39) to the Bureau of Public Work. The Prevailing Rate Schedule MUST be included in the specifications for the contract to be awarded and is deemed part of the public work contract.

Upon the awarding of the contract, the law requires that the Department of Jurisdiction (Contracting Agency) furnish the following information to the Bureau: the name and address of the contractor, the date the contract was let and the approximate dollar value of the contract. To facilitate compliance with this provision of the Labor Law, a copy of the Department's "Notice of Contract Award" form (PW 16) is provided with the original Prevailing Rate Schedule.

The Department of Jurisdiction (Contracting Agency) is required to notify the Bureau of the completion or cancellation of any public work project. The Department's PW 200 form is provided for that purpose.

Both the PW 16 and PW 200 forms are available for completion [online](#).

Hours

No laborer, worker, or mechanic in the employ of a contractor or subcontractor engaged in the performance of any public work project shall be permitted to work more than eight hours in any day or more than five days in any week, except in cases of extraordinary emergency. The contractor and the Department of Jurisdiction (Contracting Agency) may apply to the Bureau of Public Work for a dispensation permitting workers to work additional hours or days per week on a particular public work project.

There are very few exceptions to this rule. Complete information regarding these exceptions is available on the ["Request for a dispensation to work overtime" form \(PW30\)](#) and ["4 Day / 10 Hour Work Schedule" form \(PW 30.1\)](#).

Wages and Supplements

The wages and supplements to be paid and/or provided to laborers, workers, and mechanics employed on a public work project shall be not less than those listed in the current Prevailing Rate Schedule for the locality where the work is performed. If a prime contractor on a public work project has not been provided with a Prevailing Rate Schedule, the contractor must notify the Department of Jurisdiction (Contracting Agency) who in turn must request an original Prevailing Rate Schedule form the Bureau of Public Work. Requests may be submitted by: mail to NYSDOL, Bureau of Public Work, State Office Bldg. Campus, Bldg. 12, Rm. 130, Albany, NY 12240; Fax to Bureau of Public Work (518) 485-1870; or electronically at the NYSDOL website www.labor.ny.gov.

Upon receiving the original schedule, the Department of Jurisdiction (Contracting Agency) is REQUIRED to provide complete copies to all prime contractors who in turn MUST, by law, provide copies of all applicable county schedules to each subcontractor and obtain from each subcontractor, an affidavit certifying such schedules were received. If the original schedule expired, the contractor may obtain a copy of the new annual determination from the NYSDOL website www.labor.ny.gov.

The Commissioner of Labor makes an annual determination of the prevailing rates. This determination is in effect from July 1st through June 30th of the following year. The annual determination is available on the NYSDOL website www.labor.ny.gov.

Payrolls and Payroll Records

Every contractor and subcontractor MUST keep original payrolls or transcripts subscribed and affirmed as true under penalty of perjury. As per Article 6 of the Labor law, contractors and subcontractors are required to establish, maintain, and preserve for not less than six (6) years, contemporaneous, true, and accurate payroll records. At a minimum, payrolls must show the following information for each person employed on a public work project: Name, Address, Last 4 Digits of Social Security Number, Classification(s) in which the worker was employed, Hourly wage rate(s) paid, Supplements paid

or provided, and Daily and weekly number of hours worked in each classification.

The filing of payrolls to the Department of Jurisdiction is a condition of payment. Every contractor and subcontractor shall submit to the Department of Jurisdiction (Contracting Agency), within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true under penalty of perjury. The Department of Jurisdiction (Contracting Agency) shall collect, review for facial validity, and maintain such payrolls.

In addition, the Commissioner of Labor may require contractors to furnish, with ten (10) days of a request, payroll records sworn to as their validity and accuracy for public work and private work. Payroll records include, but are not limited to time cards, work description sheets, proof that supplements were provided, cancelled payroll checks and payrolls. Failure to provide the requested information within the allotted ten (10) days will result in the withholding of up to 25% of the contract, not to exceed \$100,000.00. If the contractor or subcontractor does not maintain a place of business in New York State and the amount of the contract exceeds \$25,000.00, payroll records and certifications must be kept on the project worksite.

The prime contractor is responsible for any underpayments of prevailing wages or supplements by any subcontractor.

All contractors or their subcontractors shall provide to their subcontractors a copy of the Prevailing Rate Schedule specified in the public work contract as well as any subsequently issued schedules. A failure to provide these schedules by a contractor or subcontractor is a violation of Article 8, Section 220-a of the Labor Law.

All subcontractors engaged by a public work project contractor or its subcontractor, upon receipt of the original schedule and any subsequently issued schedules, shall provide to such contractor a verified statement attesting that the subcontractor has received the Prevailing Rate Schedule and will pay or provide the applicable rates of wages and supplements specified therein. (See NYS Labor Laws, Article 8 . Section 220-a).

Determination of Prevailing Wage and Supplement Rate Updates Applicable to All Counties

The wages and supplements contained in the annual determination become effective July 1st whether or not the new determination has been received by a given contractor. Care should be taken to review the rates for obvious errors. Any corrections should be brought to the Department's attention immediately. It is the responsibility of the public work contractor to use the proper rates. If there is a question on the proper classification to be used, please call the district office located nearest the project. Any errors in the annual determination will be corrected and posted to the NYSDOL website on the first business day of each month. Contractors are responsible for paying these updated rates as well, retroactive to July 1st.

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. To the extent possible, the Department posts rates in its possession that cover periods of time beyond the July 1st to June 30th time frame covered by a particular annual determination. Rates that extend beyond that instant time period are informational ONLY and may be updated in future annual determinations that actually cover the then appropriate July 1st to June 30th time period.

Withholding of Payments

When a complaint is filed with the Commissioner of Labor alleging the failure of a contractor or subcontractor to pay or provide the prevailing wages or supplements, or when the Commissioner of Labor believes that unpaid wages or supplements may be due, payments on the public work contract shall be withheld from the prime contractor in a sufficient amount to satisfy the alleged unpaid wages and supplements, including interest and civil penalty, pending a final determination.

When the Bureau of Public Work finds that a contractor or subcontractor on a public work project failed to pay or provide the requisite prevailing wages or supplements, the Bureau is authorized by Sections 220-b and 235.2 of the Labor Law to so notify the financial officer of the Department of Jurisdiction (Contracting Agency) that awarded the public work contract. Such officer MUST then withhold or cause to be withheld from any payment due the prime contractor on account of such contract the amount indicated by the Bureau as sufficient to satisfy the unpaid wages and supplements, including interest and any civil penalty that may be assessed by the Commissioner of Labor. The withholding continues until there is a final determination of the underpayment by the Commissioner of Labor or by the court in the event a legal proceeding is instituted for review of the determination of the Commissioner of Labor.

The Department of Jurisdiction (Contracting Agency) shall comply with this order of the Commissioner of Labor or of the court with respect to the release of the funds so withheld.

Summary of Notice Posting Requirements

The current Prevailing Rate Schedule must be posted in a prominent and accessible place on the site of the public work project. The prevailing wage schedule must be encased in, or constructed of, materials capable of withstanding adverse weather conditions and be titled "PREVAILING RATE OF WAGES" in letters no smaller than two (2) inches by two (2) inches.

The "Public Work Project" notice must be posted at the beginning of the performance of every public work contract, on each job site.

Every employer providing workers' compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers' Compensation Board in a conspicuous place on the jobsite.

Every employer subject to the NYS Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers, notices furnished by the State Division of Human Rights.

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the NYS Department of Labor.

Apprentices

Employees cannot be paid apprentice rates unless they are individually registered in a program registered with the NYS Commissioner of Labor. The allowable ratio of apprentices to journeymen in any craft classification can be no greater than the statewide building trade ratios promulgated by the Department of Labor and included with the Prevailing Rate Schedule. An employee listed on a payroll as an apprentice who is not registered as above or is performing work outside the classification of work for which the apprentice is indentured, must be paid the prevailing journeyman's wage rate for the classification of work the employee is actually performing.

NYSDOL Labor Law, Article 8, Section 220-3, require that only apprentices individually registered with the NYS Department of Labor may be paid apprenticeship rates on a public work project. No other Federal or State Agency of office registers apprentices in New York State.

Persons wishing to verify the apprentice registration of any person must do so in writing by mail, to the NYSDOL Office of Employability Development / Apprenticeship Training, State Office Bldg. Campus, Bldg. 12, Albany, NY 12240 or by Fax to NYSDOL Apprenticeship Training (518) 457-7154. All requests for verification must include the name and social security number of the person for whom the information is requested.

The only conclusive proof of individual apprentice registration is written verification from the NYSDOL Apprenticeship Training Albany Central office. Neither Federal nor State Apprenticeship Training offices outside of Albany can provide conclusive registration information.

It should be noted that the existence of a registered apprenticeship program is not conclusive proof that any person is registered in that program. Furthermore, the existence or possession of wallet cards, identification cards, or copies of state forms is not conclusive proof of the registration of any person as an apprentice.

Interest and Penalties

In the event that an underpayment of wages and/or supplements is found:

- Interest shall be assessed at the rate then in effect as prescribed by the Superintendent of Banks pursuant to section 14-a of the Banking Law, per annum from the date of underpayment to the date restitution is made.
- A Civil Penalty may also be assessed, not to exceed 25% of the total of wages, supplements, and interest due.

Debarment

Any contractor or subcontractor and/or its successor shall be ineligible to submit a bid on or be awarded any public work contract or subcontract with any state, municipal corporation or public body for a period of five (5) years when:

- Two (2) willful determinations have been rendered against that contractor or subcontractor and/or its successor within any consecutive six (6) year period.
- There is any willful determination that involves the falsification of payroll records or the kickback of wages or supplements.

Criminal Sanctions

Willful violations of the Prevailing Wage Law (Article 8 of the Labor Law) may be a felony punishable by fine or imprisonment of up to 15 years, or both.

Discrimination

No employee or applicant for employment may be discriminated against on account of age, race, creed, color, national origin, sex, disability or marital status.

No contractor, subcontractor nor any person acting on its behalf, shall by reason of race, creed, color, disability, sex 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 (NYS Labor Law, Article 8, Section 220-e(a)).

No contractor, subcontractor, nor any person acting on its behalf, shall in any manner, discriminate against or intimidate any employee on account of race, creed, color, disability, sex, or national origin (NYS Labor Law, Article 8, Section 220-e(b)).

The Human Rights Law also prohibits discrimination in employment because of age, marital status, or religion.

There may be deducted from the amount payable to the contractor under the contract a penalty of \$50.00 for each calendar day during which such person was discriminated against or intimidated in violation of the provision of the contract (NYS Labor Law, Article 8, Section 220-e(c)).

The contract may be cancelled or terminated by the State or municipality. All monies due or to become due thereunder may be forfeited for a second or any subsequent violation of the terms or conditions of the anti-discrimination sections of the contract (NYS Labor Law, Article 8, Section 220-e(d)).

Every employer subject to the New York State Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers notices furnished by the State Division of Human Rights.

Workers' Compensation

In accordance with Section 142 of the State Finance Law, the contractor shall maintain coverage during the life of the contract for the benefit of such employees as required by the provisions of the New York State Workers' Compensation Law.

A contractor who is awarded a public work contract must provide proof of workers' compensation coverage prior to being allowed to begin work.

The insurance policy must be issued by a company authorized to provide workers' compensation coverage in New York State. Proof of coverage must be on form C-105.2 (Certificate of Workers' Compensation Insurance) and must name this agency as a certificate holder.

If New York State coverage is added to an existing out-of-state policy, it can only be added to a policy from a company authorized to write workers' compensation coverage in this state. The coverage must be listed under item 3A of the information page.

The contractor must maintain proof that subcontractors doing work covered under this contract secured and maintained a workers' compensation policy for all employees working in New York State.

Every employer providing worker's compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers' Compensation Board in a conspicuous place on the jobsite.

Unemployment Insurance

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the New York State Department of Labor.



Kathy Hochul, Governor

Roberta Reardon, Commissioner

SUCF

JOHN O'CONNOR
307 SEVENTH AVENUE, 1501
NEW YORK NY 10001

Schedule Year 2021 through 2022
Date Requested 11/09/2021
PRC# 2021011641

Location New Paltz
Project ID# 081058
Project Type Modernization of eleven (11) elevators at six (6) buildings at the SUNY New Paltz campus.

Notice of Contract Award

New York State Labor Law, Article 8, Section 220.3a requires that certain information regarding the awarding of public work contracts, be furnished to the Commissioner of Labor. One "Notice of Contract Award" (PW 16, which may be photocopied), **MUST** be completed for **EACH** prime contractor on the above referenced project.

Upon notifying the successful bidder(s) of this contract, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

Contractor Information

All information must be supplied

Federal Employer Identification Number: _____		
Name: _____		
Address: _____ _____		
City: _____	State: _____	Zip: _____
Amount of Contract: \$ _____	Contract Type:	
Approximate Starting Date: ____/____/____	<input type="checkbox"/> (01) General Construction	
Approximate Completion Date: ____/____/____	<input type="checkbox"/> (02) Heating/Ventilation	
	<input type="checkbox"/> (03) Electrical	
	<input type="checkbox"/> (04) Plumbing	
	<input type="checkbox"/> (05) Other : _____	

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12240

Social Security Numbers on Certified Payrolls:

The Department of Labor is cognizant of the concerns of the potential for misuse or inadvertent disclosure of social security numbers. Identity theft is a growing problem and we are sympathetic to contractors' concern regarding inclusion of this information on payrolls if another identifier will suffice.

For these reasons, the substitution of the use of the last four digits of the social security number on certified payrolls submitted to contracting agencies on public work projects is now acceptable to the Department of Labor. This change does not affect the Department's ability to request and receive the entire social security number from employers during its public work/ prevailing wage investigations.

Construction Industry Fair Play Act: Required Posting for Labor Law Article 25-B § 861-d

Construction industry employers must post the "Construction Industry Fair Play Act" notice in a prominent and accessible place on the job site. Failure to post the notice can result in penalties of up to \$1,500 for a first offense and up to \$5,000 for a second offense. The posting is included as part of this wage schedule. Additional copies may be obtained from the NYS DOL website, www.labor.ny.gov. <https://labor.ny.gov/formsdocs/ui/IA999.pdf>

If you have any questions concerning the Fair Play Act, please call the State Labor Department toll-free at 1-866-435-1499 or email us at: dol.misclassified@labor.ny.gov .

Worker Notification: (Labor Law §220, paragraph a of subdivision 3-a)

Effective June 23, 2020

This provision is an addition to the existing wage rate law, Labor Law §220, paragraph a of subdivision 3-a. It requires contractors and subcontractors to provide written notice to all laborers, workers or mechanics of the *prevailing wage and supplement rate* for their particular job classification *on each pay stub**. It also requires contractors and subcontractors to *post a notice* at the beginning of the performance of every public work contract *on each job site* that includes the telephone number and address 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 job classification. The required notification will be provided with each wage schedule, may be downloaded from our website www.labor.ny.gov or be made available upon request by contacting the Bureau of Public Work at 518-457-5589. *In the event the required information will not fit on the pay stub, an accompanying sheet or attachment of the information will suffice.

(12.20)

**To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND**

Budget Policy & Reporting Manual

B-610

Public Work Enforcement Fund

effective date December 7, 2005

1. Purpose and Scope:

This Item describes the Public Work Enforcement Fund (the Fund, PWEF) and its relevance to State agencies and public benefit corporations engaged in construction or reconstruction contracts, maintenance and repair, and announces the recently-enacted increase to the percentage of the dollar value of such contracts that must be deposited into the Fund. This item also describes the roles of the following entities with respect to the Fund:

- New York State Department of Labor (DOL),
- The Office of the State of Comptroller (OSC), and
- State agencies and public benefit corporations.

2. Background and Statutory References:

DOL uses the Fund to enforce the State's Labor Law as it relates to contracts for construction or reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law. State agencies and public benefit corporations participating in such contracts are required to make payments to the Fund.

Chapter 511 of the Laws of 1995 (as amended by Chapter 513 of the Laws of 1997, Chapter 655 of the Laws of 1999, Chapter 376 of the Laws of 2003 and Chapter 407 of the Laws of 2005) established the Fund.

3. Procedures and Agency Responsibilities:

The Fund is supported by transfers and deposits based on the value of contracts for construction and reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law, into which all State agencies and public benefit corporations enter.

Chapter 407 of the Laws of 2005 increased the amount required to be provided to this fund to .10 of one-percent of the total cost of each such contract, to be calculated at the time agencies or public benefit corporations enter into a new contract or if a contract is amended. The provisions of this bill became effective August 2, 2005.

To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND

OSC will report to DOL on all construction-related ("D") contracts approved during the month, including contract amendments, and then DOL will bill agencies the appropriate assessment monthly. An agency may then make a determination if any of the billed contracts are exempt and so note on the bill submitted back to DOL. For any instance where an agency is unsure if a contract is or is not exempt, they can call the Bureau of Public Work at the number noted below for a determination. Payment by check or journal voucher is due to DOL within thirty days from the date of the billing. DOL will verify the amounts and forward them to OSC for processing.

For those contracts which are not approved or administered by the Comptroller, monthly reports and payments for deposit into the Public Work Enforcement Fund must be provided to the Administrative Finance Bureau at the DOL within 30 days of the end of each month or on a payment schedule mutually agreed upon with DOL.

Reports should contain the following information:

- Name and billing address of State agency or public benefit corporation;
- State agency or public benefit corporation contact and phone number;
- Name and address of contractor receiving the award;
- Contract number and effective dates;
- Contract amount and PWEF assessment charge (if contract amount has been amended, reflect increase or decrease to original contract and the adjustment in the PWEF charge); and
- Brief description of the work to be performed under each contract.

Checks and Journal Vouchers, payable to the "New York State Department of Labor" should be sent to:

Department of Labor
Administrative Finance Bureau-PWEF Unit
Building 12, Room 464
State Office Campus
Albany, NY 12240

Any questions regarding billing should be directed to NYSDOL's Administrative Finance Bureau-PWEF Unit at (518) 457-3624 and any questions regarding Public Work Contracts should be directed to the Bureau of Public Work at (518) 457-5589.



Required Notice under Article 25-B of the Labor Law

**Attention All Employees, Contractors and Subcontractors:
You are Covered by the Construction Industry Fair Play Act**

The law says that you are an employee unless:

- You are free from direction and control in performing your job, **and**
- You perform work that is not part of the usual work done by the business that hired you, **and**
- You have an independently established business.

Your employer cannot consider you to be an independent contractor unless all three of these facts apply to your work.

It is against the law for an employer to misclassify employees as independent contractors or pay employees off the books.

Employee Rights: If you are an employee, you are entitled to state and federal worker protections. These include:

- Unemployment Insurance benefits, if you are unemployed through no fault of your own, able to work, and otherwise qualified,
- Workers' compensation benefits for on-the-job injuries,
- Payment for wages earned, minimum wage, and overtime (under certain conditions),
- Prevailing wages on public work projects,
- The provisions of the National Labor Relations Act, and
- A safe work environment.

It is a violation of this law for employers to retaliate against anyone who asserts their rights under the law. Retaliation subjects an employer to civil penalties, a private lawsuit or both.

Independent Contractors: If you are an independent contractor, **you must pay all taxes and Unemployment Insurance contributions required by New York State and Federal Law.**

Penalties for paying workers off the books or improperly treating employees as independent contractors:

- **Civil Penalty**
 - First offense: Up to \$2,500 per employee
 - Subsequent offense(s): Up to \$5,000 per employee
- **Criminal Penalty**
 - First offense: Misdemeanor - up to 30 days in jail, up to a \$25,000 fine and debarment from performing public work for up to one year.
 - Subsequent offense(s): Misdemeanor - up to 60 days in jail or up to a \$50,000 fine and debarment from performing public work for up to 5 years.

If you have questions about your employment status or believe that your employer may have violated your rights and you want to file a complaint, call the Department of Labor at (866) 435-1499 or send an email to dol.misclassified@labor.ny.gov. All complaints of fraud and violations are taken seriously. You can remain anonymous.

Employer Name:

IA 999 (09/16)

Attention Employees

THIS IS A: **PUBLIC WORK PROJECT**

If you are employed on this project as a **worker, laborer, or mechanic** you are entitled to receive the **prevailing wage and supplements rate** for the classification at which you are working.

Chapter 629 of
the Labor Laws
of 2007:

**These wages are set by law and must be posted
at the work site. They can also be found at:**
www.labor.ny.gov

If you feel that you have not received proper wages or benefits,
please call our nearest office.*

Albany	(518) 457-2744	Patchogue	(631) 687-4882
Binghamton	(607) 721-8005	Rochester	(585) 258-4505
Buffalo	(716) 847-7159	Syracuse	(315) 428-4056
Garden City	(516) 228-3915	Utica	(315) 793-2314
New York City	(212) 932-2419	White Plains	(914) 997-9507
Newburgh	(845) 568-5156		

* For New York City government agency construction projects, please
contact the Office of the NYC Comptroller at (212) 669-4443, or
www.comptroller.nyc.gov – click on Bureau of Labor Law.

Contractor Name: _____

Project Location: _____

Requirements for OSHA 10 Compliance

Article 8 §220-h requires that when the advertised specifications, for every contract for public work, is \$250,000.00 or more the contract must contain a provision requiring that every worker employed in the performance of a public work contract shall be certified as having completed an OSHA 10 safety training course. The clear intent of this provision is to require that all employees of public work contractors, required to be paid prevailing rates, receive such training "prior to the performing any work on the project."

The Bureau will enforce the statute as follows:

All contractors and sub contractors must attach a copy of proof of completion of the OSHA 10 course to the first certified payroll submitted to the contracting agency and on each succeeding payroll where any new or additional employee is first listed.

Proof of completion may include but is not limited to:

- Copies of bona fide course completion card (*Note: Completion cards do not have an expiration date.*)
- Training roster, attendance record or other documentation from the certified trainer pending the issuance of the card.
- Other valid proof

**A certification by the employer attesting that all employees have completed such a course is not sufficient proof that the course has been completed.

Any questions regarding this statute may be directed to the New York State Department of Labor, Bureau of Public Work at 518-457-5589.

WICKS

Public work projects are subject to the Wicks Law requiring separate specifications and bidding for the plumbing, heating and electrical work, when the total project's threshold is \$3 million in Bronx, Kings, New York, Queens and, Richmond counties; \$1.5 million in Nassau, Suffolk and Westchester counties; and \$500,000 in all other counties.

For projects below the monetary threshold, bidders must submit a sealed list naming each subcontractor for the plumbing, HVAC and electrical and the amount to be paid to each. The list may not be changed unless the public owner finds a legitimate construction need, including a change in specifications or costs or the use of a Project Labor Agreement (PLA), and must be open to public inspection.

Allows the state and local agencies and authorities to waive the Wicks Law and use a PLA if it will provide the best work at the lowest possible price. If a PLA is used, all contractors shall participate in apprentice training programs in the trades of work it employs that have been approved by the Department of Labor (DOL) for not less than three years. They shall also have at least one graduate in the last three years and use affirmative efforts to retain minority apprentices. PLA's would be exempt from Wicks, but deemed to be public work subject to prevailing wage enforcement.

The Commissioner of Labor shall have the power to enforce separate specification requirements on projects, and may issue stop-bid orders against public owners for non-compliance.

Other new monetary thresholds, and similar sealed bidding for non-Wicks projects, would apply to certain public authorities including municipal housing authorities, NYC Construction Fund, Yonkers Educational Construction Fund, NYC Municipal Water Finance Authority, Buffalo Municipal Water Finance Authority, Westchester County Health Care Association, Nassau County Health Care Corp., Clifton-Fine Health Care Corp., Erie County Medical Center Corp., NYC Solid Waste Management Facilities, and the Dormitory Authority.

Contractors must pay subcontractors within a 7 days period.

(07.19)

Introduction to the Prevailing Rate Schedule

Information About Prevailing Rate Schedule

This information is provided to assist you in the interpretation of particular requirements for each classification of worker contained in the attached Schedule of Prevailing Rates.

Classification

It is the duty of the Commissioner of Labor to make the proper classification of workers taking into account whether the work is heavy and highway, building, sewer and water, tunnel work, or residential, and to make a determination of wages and supplements to be paid or provided. It is the responsibility of the public work contractor to use the proper rate. If there is a question on the proper classification to be used, please call the district office located nearest the project. District office locations and phone numbers are listed below.

Prevailing Wage Schedules are issued separately for "General Construction Projects" and "Residential Construction Projects" on a county-by-county basis.

General Construction Rates apply to projects such as: Buildings, Heavy & Highway, and Tunnel and Water & Sewer rates.

Residential Construction Rates generally apply to construction, reconstruction, repair, alteration, or demolition of one family, two family, row housing, or rental type units intended for residential use.

Some rates listed in the Residential Construction Rate Schedule have a very limited applicability listed along with the rate. Rates for occupations or locations not shown on the residential schedule must be obtained from the General Construction Rate Schedule. Please contact the local Bureau of Public Work office before using Residential Rate Schedules, to ensure that the project meets the required criteria.

Payrolls and Payroll Records

Contractors and subcontractors are required to establish, maintain, and preserve for not less than six (6) years, contemporaneous, true, and accurate payroll records.

Every contractor and subcontractor shall submit to the Department of Jurisdiction (Contracting Agency), within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true under penalty of perjury.

Paid Holidays

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

Overtime

At a minimum, all work performed on a public work project in excess of eight hours in any one day or more than five days in any workweek is overtime. However, the specific overtime requirements for each trade or occupation on a public work project may differ. Specific overtime requirements for each trade or occupation are contained in the prevailing rate schedules.

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays.

The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Supplemental Benefits

Particular attention should be given to the supplemental benefit requirements. Although in most cases the payment or provision of supplements is straight time for all hours worked, some classifications require the payment or provision of supplements, or a portion of the supplements, to be paid or provided at a premium rate for premium hours worked. Supplements may also be required to be paid or provided on paid holidays, regardless of whether the day is worked. The Overtime Codes and Notes listed on the particular wage classification will indicate these conditions as required.

Effective Dates

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. The rate listed is valid until the next effective rate change or until the new annual determination which takes effect on July 1 of each year. All contractors and subcontractors are required to pay the current prevailing rates of wages and supplements. If you have any questions please contact the Bureau of Public Work or visit the New York State Department of Labor website (www.labor.ny.gov) for current wage rate information.

Apprentice Training Ratios

The following are the allowable ratios of registered Apprentices to Journey-workers.

For example, the ratio 1:1,1:3 indicates the allowable initial ratio is one Apprentice to one Journeyworker. The Journeyworker must be in place on the project before an Apprentice is allowed. Then three additional Journeyworkers are needed before a second Apprentice is allowed. The last ratio repeats indefinitely. Therefore, three more Journeyworkers must be present before a third Apprentice can be hired, and so on.

Please call Apprentice Training Central Office at (518) 457-6820 if you have any questions.

Title (Trade)	Ratio
Boilermaker (Construction)	1:1,1:4
Boilermaker (Shop)	1:1,1:3
Carpenter (Bldg.,H&H, Pile Driver/Dockbuilder)	1:1,1:4
Carpenter (Residential)	1:1,1:3
Electrical (Outside) Lineman	1:1,1:2
Electrician (Inside)	1:1,1:3
Elevator/Escalator Construction & Modernizer	1:1,1:2
Glazier	1:1,1:3
Insulation & Asbestos Worker	1:1,1:3
Iron Worker	1:1,1:4
Laborer	1:1,1:3
Mason	1:1,1:4
Millwright	1:1,1:4
Op Engineer	1:1,1:5
Painter	1:1,1:3
Plumber & Steamfitter	1:1,1:3
Roofer	1:1,1:2
Sheet Metal Worker	1:1,1:3
Sprinkler Fitter	1:1,1:2

If you have any questions concerning the attached schedule or would like additional information, please contact the nearest BUREAU of PUBLIC WORK District Office or write to:

New York State Department of Labor
Bureau of Public Work
State Office Campus, Bldg. 12
Albany, NY 12240

District Office Locations:	Telephone #	FAX #
Bureau of Public Work - Albany	518-457-2744	518-485-0240
Bureau of Public Work - Binghamton	607-721-8005	607-721-8004
Bureau of Public Work - Buffalo	716-847-7159	716-847-7650
Bureau of Public Work - Garden City	516-228-3915	516-794-3518
Bureau of Public Work - Newburgh	845-568-5287	845-568-5332
Bureau of Public Work - New York City	212-932-2419	212-775-3579
Bureau of Public Work - Patchogue	631-687-4882	631-687-4902
Bureau of Public Work - Rochester	585-258-4505	585-258-4708
Bureau of Public Work - Syracuse	315-428-4056	315-428-4671
Bureau of Public Work - Utica	315-793-2314	315-793-2514
Bureau of Public Work - White Plains	914-997-9507	914-997-9523
Bureau of Public Work - Central Office	518-457-5589	518-485-1870

Ulster County General Construction

Boilermaker

11/01/2021

JOB DESCRIPTION Boilermaker

DISTRICT 4

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Per Hour: 07/01/2021

Boilermaker \$ 63.38

Repairs & Renovations 63.38

SUPPLEMENTAL BENEFITS

Per Hour: 07/01/2021

Boilermaker 32% of hourly

Repair \$ Renovations Wage Paid

+ \$ 25.38

NOTE: "Hourly Wage Paid" shall include any and all premium(s) pay.

Repairs & Renovation Includes replacement of parts and repairs & renovation of existing unit.

OVERTIME PAY

See (D, O) on OVERTIME PAGE

Repairs & Renovation see (B,E,Q)

HOLIDAY

Paid: See (8, 16, 23, 24) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 12, 15, 16, 22, 23, 24, 25) on HOLIDAY PAGE

NOTE: *Employee must work in pay week to receive Holiday Pay.

**Employee gets 4 times the hourly wage rate for working Labor Day.

REGISTERED APPRENTICES

Wage per hour:

(1/2) Year Terms at the following percentage of Boilermaker's Wage

1st	2nd	3rd	4th	5th	6th	7th
65%	70%	75%	80%	85%	90%	95%

Supplemental Benefits Per Hour:

07/01/2021

Apprentice(s) 32% of Hourly
Wage Paid Plus
Amount Below

1st Term \$ 19.41

2nd Term 20.26

3rd Term 21.11

4th Term 21.96

5th Term 22.82

6th Term 23.68

7th Term 24.52

NOTE: "Hourly Wage Paid" shall include any and all premium(s)

4-5

Carpenter - Building / Heavy&Highway

11/01/2021

JOB DESCRIPTION Carpenter - Building / Heavy&Highway

DISTRICT 2

ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orleans, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

PARTIAL COUNTIES

Orange: The area lying on Northern side of Orange County demarcated by a line drawn from the Bear Mountain Bridge continuing west to the Bear Mountain Circle, continue North on 9W to the town of Cornwall where County Road 107 (also known as Quaker Rd) crosses under 9W, then east on County Road 107 to Route 32, then north on Route 32 to Orrs Mills Rd, then west on Orrs Mills Rd to Route 94, continue west and south on Route 94 to the Town of Chester, to the intersection of Kings Highway, continue south on Kings Highway to Bellvale Rd, west on Bellvale Rd to Bellvale Lakes Rd, then south on Bellvale Lakes Rd to Kain Rd, southeast on Kain Rd to Route 17A, then north and southeast along Route 17A to Route 210, then follow Route 210 to NJ Border.

WAGES

Wages per hour: 07/01/2021

Carpenter - ONLY for
Artificial Turf/Synthetic
Sport Surface \$ 32.08

Note - Does not include the operation of equipment. Please see Operating Engineers rates.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 24.20

OVERTIME PAY

See (B, E, Q, X) on OVERTIME PAGE

HOLIDAY

Paid: See (5) on HOLIDAY PAGE
Overtime: See (5, 6, 16) on HOLIDAY PAGE

Notes:

When a holiday falls upon a Saturday, it shall be observed on the preceding Friday. When a holiday falls upon a Sunday, it shall be observed on the following Monday.

An employee taking an unexcused day off the regularly scheduled day before or after a paid Holiday shall not receive Holiday pay.

REGISTERED APPRENTICES

Wages per hour:

One year terms at the following percentage of Journeyman's wage:

1st	2nd	3rd	4th
55%	60%	70%	80%

Supplemental Benefits per hour:

1st year term	\$ 12.15
2nd year term	12.15
3rd year term	14.80
4th year term	14.80

2-42AtSS

Carpenter - Building / Heavy&Highway

11/01/2021

JOB DESCRIPTION Carpenter - Building / Heavy&Highway

DISTRICT 11

ENTIRE COUNTIES

Columbia, Dutchess, Orange, Sullivan, Ulster

WAGES

WAGES:(per hour)
BUILDING/HEAVY&HIGHWAY/TUNNEL 07/01/2021

Carpenter, Dockbuilder,
Piledriver, Dive Tender,
and Diver (Dry) \$ 34.26
+4.78*

Diver (Wet) \$ 50.00
+4.78*

*For all hours paid straight or premium.

SHIFT DIFFERENTIAL: When mandated by a Government Agency irregular or off shift can be worked. The Carpenter shall receive an additional fifteen percent (15%) of wage plus applicable benefits.

NOTE: Carpenters employed in the removal or abatement of asbestos or any toxic or hazardous material or required to work near asbestos or any toxic or hazardous material and required to wear protective equipment shall receive two (2) hours extra pay per day, plus applicable benefits.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker \$ 28.81

OVERTIME PAY

BUILDING:

See (B, E, Q) on OVERTIME PAGE.

HEAVY&HIGHWAY/TUNNEL:

See (B, E, P, *R, **T, X) on OVERTIME PAGE.

*R applies to Heavy&Highway/Tunnel Overtime Holiday Code 25 with benefits at straight time rate.

**T applies to Heavy&Highway/Tunnel Overtime Holiday Codes 5 & 6 with benefits at straight time rate.

HOLIDAY

BUILDING:

Paid: See (1) on HOLIDAY PAGE.

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE.

Holidays that fall on Sunday will be observed Monday.

HEAVY&HIGHWAY/TUNNEL:

Paid: See (5, 6, 25) on HOLIDAY PAGE including benefits.

Overtime: See (5, 6, 25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

1 Year terms at the following wage rates.

Indentured before July 1 2016

1st	2nd	3rd	4th
\$ 17.13	\$ 20.56	\$ 23.98	\$ 27.41
+2.57*	+2.57*	+2.57*	+2.57*

Indentured after July 1 2016

1st	2nd	3rd	4th	5th
\$ 17.13	\$20.56	\$22.27	\$23.98	\$27.41
+2.57*	+2.57*	+2.57*	+2.57*	+2.57*

*For all hours paid straight or premium

SUPPLEMENTAL BENEFITS per hour:

All terms \$ 16.33

11-279.2B/H&H

Carpenter - Floor Coverer

11/01/2021

JOB DESCRIPTION Carpenter - Floor Coverer

DISTRICT 11

ENTIRE COUNTIES

Columbia, Sullivan, Ulster

PARTIAL COUNTIES

Orange: The area lying on Northern side of Orange County demarcated by a line drawn from the Bear Mountain Bridge continuing west to the Bear Mountain Circle, continue North on 9W to the town of Cornwall where County Road 107 (also known as Quaker Rd) crosses under 9W, then east on County Road 107 to Route 32, then north on Route 32 to Orrs Mills Rd, then west on Orrs Mills Rd to Route 94, continue west and south on Route 94 to the Town of Chester, to the intersection of Kings Highway, continue south on Kings Highway to Bellvale Rd, west on Bellvale Rd to Bellvale Lakes Rd, then south on Bellvale Lakes Rd to Kain Rd, southeast on Kain Rd to Route 17A, then north and southeast along Route 17A to Route 210, then follow Route 210 to NJ Border.

WAGES

WAGES:(per hour)

07/01/2021

Carpet/Resilient Floor Coverer \$ 34.26
+4.78*

* For all hours paid straight or premium

SHIFT DIFFERENTIAL: When mandated by a Government Agency irregular or off shift can be worked. The Carpenter shall receive an additional fifteen (15) percent of wage plus applicable benefits.

NOTE: Carpenters employed in the removal or abatement of asbestos or any toxic or hazardous material or required to work near asbestos or any toxic or hazardous materials and required to wear protective equipment shall receive two (2) hours extra pay per day, plus applicable benefits.

SUPPLEMENTAL BENEFITS

Per hour:

Journey worker \$ 28.81

OVERTIME PAY

BUILDING:

See (B, E, Q) on OVERTIME PAGE.

HEAVY/HIGHWAY:

See (B, E, P, *R, **T , X) on OVERTIME PAGE.

*R applies to Heavy/Highway Overtime Holiday Code 25 with benefits at straight time rate.

**T applies to Heavy/Highway Overtime Holiday Codes 5 & 6 with benefits at straight time rate.

HOLIDAY

BUILDING:

Paid: See (1) on HOLIDAY PAGE.

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE.

Holidays that fall on Sunday will be observed Monday.

HEAVY/HIGHWAY:

Paid: See (5, 6, 25) on HOLIDAY PAGE including benefits.

Overtime: See (5, 6, 25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

1 Year terms at the following wage rates.

Indentured before July 1 2016

1st	2nd	3rd	4th
\$ 17.13	\$ 20.56	\$ 23.98	\$ 27.41
+2.57*	+2.57*	+2.57*	+2.57*

Indentured after July 1 2016

1st	2nd	3rd	4th	5th
\$ 17.13	\$ 20.56	\$ 22.27	\$ 23.98	\$ 27.41
+2.57*	+2.57*	+2.57*	+2.57*	+2.57*

*For all hours paid straight or premium

SUPPLEMENTAL BENEFITS per hour:

All terms \$ 16.33

11-279.2Floor

Electrician

11/01/2021

JOB DESCRIPTION Electrician

DISTRICT 11

ENTIRE COUNTIES

Sullivan, Ulster

PARTIAL COUNTIES

Delaware: Only in the Townships of Andes, Harpersfield, Kortwright, Stamford, Bovina, Roxbury, Middletown and those portions of Colchester and Hancock south of the East Branch of the Delaware River.

Dutchess: All of the county except for the towns of Fishkill, East Fishkill, and Beacon.

Greene: That portion of the county south of a line following the south limits of the city of Catskill in a Westerly direction from the Hudson River to Highway 23A along 23A to the road following the Little Westkill and continuing along this road to Delaware County.

WAGES

Per hour:

Electrician Wireman/ Technician	07/01/2021
Electrical/Technician Projects	
under \$ 250,000.00	\$ 43.00
	+ 8.50*
over \$ 250,000.00	\$ 47.00
	+8.50*

SHIFT DIFFERENTIAL: On Public Work in New York State when shift work is mandated either in the job specifications or by the contracting agency, the following rates apply:

Shift worked between 4:30pm & 12:30am
Electrical/Technician Projects

under \$ 250,000.00	\$ 50.45 + 8.50*
over \$ 250,000.00	\$ 55.15 + 8.50*

Shift worked between 12:30am & 8:30am

Electrical/Technician Projects

under \$ 250,000.00	\$ 56.51 + 8.50*
over \$ 250,000.00	\$ 61.77 + 8.50*

*For all hours paid straight or premium, not to be included in 3% calculation for supplemental benefits.

NOTE ADDITIONAL AMOUNTS PAID FOR THE FOLLOWING WORK LISTED BELOW (subject to overtime premiums):

- On jobs where employees are required to work from boatswain chairs, swinging scaffolds, etc., forty (40) feet or more above the ground, or under compressed air, using Scottair packs, gas masks or in shafts or tunnels, they shall receive an additional \$2.00 per hour above the regular straight time rate.
- Journeyman Wireman when performing welding or cable splicing: \$2.00 above the Journeyman Wireman rate of pay
- Journeyman Wireman required to have a NYS Asbestos Certificate: \$2.00 above the Journeyman Wireman rate of pay
- Journeyman Wireman required to have a CDL: \$2.00 above the Journeyman Wireman rate of pay.

SUPPLEMENTAL BENEFITS

Per hour:	07/01/2021
Journeyman	\$ 26.19 plus 3% of straight or premium wage

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 13, 15, 16, 25) on HOLIDAY PAGE

When the holiday falls on a Saturday it is observed the Friday before. When the holiday falls on a Sunday it is observed on the Monday after.

REGISTERED APPRENTICES

WAGES:

(1)year terms at the following rates

07/01/2021	1st	2nd	3rd	4th	5th	6th
1st Shift	\$ 13.50 +1.00*	\$ 18.00 +1.00*	\$ 22.50 +1.50*	\$ 27.00 +2.00*	\$ 31.50 +2.50*	\$ 33.75 +2.50*
2nd Shift	15.84 +1.00*	21.12 +1.00*	26.40 +1.50*	31.68 +2.00*	36.96 +2.50*	39.61 +2.50*
3rd Shift	17.75 +1.00*	23.66 +1.00*	29.58 +1.50*	35.49 +2.00*	41.41 +2.50*	44.35 +2.50*

*For all hours paid straight or premium, not to be included in 3% calculation for supplemental benefits.

SUPPLEMENTAL BENEFITS per hour:

07/01/2021	
1st term	\$ 15.31 plus 3% of straight or premium wage
2nd term	\$ 15.81 plus 3% of straight or premium wage
3rd term	\$ 17.31 plus 3% of straight or premium wage
4th term	\$ 18.31 plus 3% of straight or premium wage
5th term	\$ 19.81 plus 3% of straight or premium wage
6th term	\$ 19.81 plus 3% of straight or premium wage

11-363/2

Elevator Constructor

11/01/2021

JOB DESCRIPTION Elevator Constructor

DISTRICT 1

ENTIRE COUNTIES

Columbia, Dutchess, Greene, Orange, Putnam, Sullivan, Ulster

PARTIAL COUNTIES

Delaware: Towns of Andes, Bovina, Colchester, Davenport, Delhi, Harpersfield, Hemdon, Kortright, Meredith, Middletown, Roxbury, Hancock & Stamford

Rockland: Only the Township of Stony Point.

Westchester: Only the Townships of Bedford, Lewisboro, Cortland, Mt. Kisco, North Salem, Pound Ridge, Somers and Yorktown.

WAGES

Per Hour	07/01/2021	01/01/2022
Mechanic	\$ 62.51	\$ 64.63
Helper	70% of Mechanic Wage Rate	70% of Mechanic Wage Rate

Four (4), ten (10) hour days may be worked for New Construction and Modernization Work at straight time during a week, Monday thru Thursday or Tuesday thru Friday.

***Four (4), ten (10) hour days are not permitted for Contract Work/Repair Work

NOTE - In order to use the '4 Day/10 Hour Work Schedule' as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule', form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour	07/01/2021	01/01/2022
Journeyman/Helper	\$ 35.825*	\$ 36.885*

(*)Plus 6% of regular hourly if less than 5 years of service. Plus 8% of regular hourly rate if more than 5 years of service.

OVERTIME PAY

See (D, O) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 15, 16) on HOLIDAY PAGE
Overtime: See (5, 6, 15, 16) on HOLIDAY PAGE

Note: When a paid holiday falls on Saturday, it shall be observed on Friday. When a paid holiday falls on Sunday, it shall be observed on Monday.

REGISTERED APPRENTICES

Wages per hour:

0-6 mo*	6-12 mo	2nd yr	3rd yr	4th yr
50 %	55 %	65 %	70 %	80 %

(*)Plus 6% of the hourly rate, no additional supplemental benefits.

Supplemental Benefits per hour worked:

Same as Journeyman/Helper

1-138

Glazier	11/01/2021
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JOB DESCRIPTION Glazier

DISTRICT 8

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Per hour:	7/01/2021	11/01/2021
Glazier	\$ 58.60	\$ 59.10
*Scaffolding	59.55	60.55
Glass Tinting & Window Film	29.60	29.60
**Repair & Maintenance	29.60	29.60

*Scaffolding includes swing scaffold, mechanical equipment, scissor jacks, man lifts, booms & buckets 24' or more, but not pipe scaffolding.

**Repair & Maintenance- All repair & maintenance work on a particular building, whenever performed, where the total cumulative contract value is under \$148,837. All Glass tinting, window film, regardless of material or intended use, and all affixing of decals to windows or glass.

SUPPLEMENTAL BENEFITS

Per hour:	7/01/2021	11/01/2021
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Journeyworker	\$ 36.04	\$ 36.79
Glass tinting & Window Film	21.19	21.19
Repair & Maintenance	21.19	21.19

OVERTIME PAY

See (B,H,V) on OVERTIME PAGE.

For 'Repair & Maintenance' and 'Glass Tinting & Window Film' see (B, B2, I, S) on overtime page.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (4, 6, 16, 25) on HOLIDAY PAGE

For 'Repair & Maintenance' and 'Glass Tinting & Window Film' Only

Paid: See(5, 6, 16, 25)

Overtime: See(5, 6, 16, 25)

REGISTERED APPRENTICES

Wage per hour:

(1) year terms at the following wage rates:

	7/01/2021	11/01/2021
1st term	\$ 20.72	\$ 21.00
2nd term	28.66	28.87
3rd term	34.67	34.94
4th term	46.62	47.01

Supplemental Benefits:

(Per hour)

1st term	\$ 16.58	\$ 16.80
2nd term	23.57	23.99
3rd term	26.09	26.57
4th term	30.91	31.52

8-1087 (DC9 NYC)

Insulator - Heat & Frost

11/01/2021

JOB DESCRIPTION Insulator - Heat & Frost

DISTRICT 1

ENTIRE COUNTIES

Albany, Columbia, Delaware, Essex, Fulton, Greene, Hamilton, Montgomery, Rensselaer, Saratoga, Schenectady, Schoharie, Sullivan, Ulster, Warren, Washington

WAGES

Wages per hour 07/01/2021

Asbestos Worker*	\$ 37.12
Insulator*	37.12
Firestopping Worker*	31.55

(*)On Mechanical Systems only.

On government mandated shift work additional 12% of wage for all shifts starting after 3:30 P.M.

SUPPLEMENTAL BENEFITS

Per hour

Journeyperson	\$ 23.20
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OVERTIME PAY

See (*B1, **Q) on OVERTIME PAGE

*B1=Double time begins after 10 hours on Saturday

**Q=Triple time on Labor Day if worked.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

When a holiday falls on Sunday the following Monday shall be observed as the holiday.

REGISTERED APPRENTICES

Wages per hour

one year terms at the following percentage of Journeyperson's wage.

1st	2nd	3rd	4th
60 %	70 %	80 %	90 %

Supplemental Benefits per hour worked:

Apprentices \$ 23.20

1-40

Ironworker**11/01/2021**

JOB DESCRIPTION Ironworker

DISTRICT 11

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster

WAGES

Per hour:

	07/01/2021	07/01/2022 Additional	07/01/2023 Additional
Structural	\$ 50.18	\$ 2.33	\$ 2.34
Reinforcing*	50.18	2.33	2.34
Ornamental	50.18	2.33	2.34
Chain Link Fence	50.18	2.33	2.34

*NOTE: For Reinforcing classification ONLY, Ironworker 4-46Reinf rates apply in Rockland County's southern section (south of Convent Road and east of Blue Hills Road).

On Government Mandated Irregular Work Days or Shift Work, the following wage will be paid:

1st Shift	\$ 50.18
2nd Shift	64.04
3rd Shift	68.66

**Note- Any shift that works past 12:00 midnight shall receive the 3rd shift differential.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 40.90

OVERTIME PAY

See (B1, Q, V) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16) on HOLIDAY PAGE

If a holiday falls on Saturday, it will be observed Friday. If a holiday falls on Sunday, it will be observed Monday.

REGISTERED APPRENTICES

Wages:

(1) year terms at the following wage:

	1st yr	2nd yr	3rd yr	4th yr
1st Shift	\$ 25.09	\$ 30.11	\$ 35.13	\$ 40.14
2nd Shift	34.31	40.25	46.20	52.14
3rd Shift	37.38	43.64	49.89	56.14

Supplemental Benefits per hour:

1st year	\$ 35.05
2nd year	36.22
3rd year	37.39
4th year	38.56

11-417

Laborer - Building**11/01/2021**

JOB DESCRIPTION Laborer - Building

DISTRICT 11

ENTIRE COUNTIES

Orange, Sullivan, Ulster

PARTIAL COUNTIES

Delaware: Only the Townships of Andes, Bovina, Davenport, Delhi, Franklin, Hamden, Harpersfield, Kortright, Meredith, Middletown, Roxbury, and Stamford.

Greene: Only the Township of Catskill.

WAGES

GENERAL LABORER: flag person, portable generator tender, portable pump tender, temporary heat tender, chipping hammer, acoustic pump, mixer, concrete laborer, demolition, demo saw, gunite, general cleanup, landscaping, mason tender, jackhammer, pavement breaker, pressure blasting, signalperson, buggies, wrecking, chain saw, vacuums, cutting torch, discharge pipe, mega mixer, pump crete machine.

INTERMEDIATE LABORER: excavation, grading, backfilling, tampers, walk behind roller, when OSHA or contractor requires negative respirator.

PREMIUM LABORER: Asbestos abatement work, toxic and hazardous abatement, lead abatement work, environmental work.

WAGES:(per hour)

	07/01/2021	06/01/2022
General	\$ 39.00	\$ 40.40
Intermediate	40.85	42.30
Premium	43.75	45.30

These rates will cover all work within five feet of the building foundation line.

Shift Differential: On all Governmental mandated irregular or off shift work, an additional 25% of wage is required. The 25% shift differential will be paid on public works contract for shifts or irregular workdays outside the normal working hours for 2nd and 3rd shifts or irregular work day or when mandated or required by state, federal, county, local or other governmental agency contracts.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	\$ 30.95	\$ 31.65
Shift	37.85	38.61

OVERTIME PAY

See (B, E, E5, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

Holidays that fall on Saturday shall be observed on Friday, when holidays fall on Sunday they shall be observed on Monday.

REGISTERED APPRENTICES

1000 hour terms at the following wage rates:

1st term	\$ 21.45	\$ 22.22
2nd term	25.35	26.26
3rd term	29.25	30.30
4th term	33.15	34.34

Supplemental Benefits per hour:

Apprentices	\$ 25.85	\$ 26.90
Shift	31.32	32.55

11-17.BA

Laborer - Heavy&Highway

11/01/2021

JOB DESCRIPTION Laborer - Heavy&Highway

DISTRICT 11

ENTIRE COUNTIES

Orange, Sullivan, Ulster

PARTIAL COUNTIES

Delaware: Only the Townships of Andes, Bovina, Middletown, Roxbury, Franklin, Hamden, Stamford, Delhi, Kortright, Harpersfield, Meredith, and Davenport.

Greene: Only the Township of Catskill.

WAGES

CLASS 1: Flagperson, gateperson.

CLASS 2: General laborer, chuck tender, nipper, powder carrier, magazine tender, concrete men, vibrator men, mason tender, mortar men, traffic control, custodial work, temporary heat, pump men, pit men, dump men, asphalt men, joint setter, signalman, pipe men, riprap, dry stone layers, jack hammer, bush hammer, pavement breaker, gunnite nozzle, men on mulching & seeding machines, all seeding & sod laying, landscape work, walk behind self-propelled power saws, grinder, groover, walk behind rollers and tampers of all types, burner men, filling and wiring of baskets for gabion walls, chain saw operator, railroad track laborers, power buggy & pumpcrete ops., plaster & acoustic pump, power brush cutter, retention liners, walk behind surface planer, chipping hammer, manhole, catch basin or inlet installing, mortar mixer, laser men. *Micropaving and crack sealing.

CLASS 3: Asbestos, toxic, bio remediation and phyto remediation, lead or hazardous materials abatement when certification or license is required, Drilling Equipment Only Where a Separate Air Compressor Unit Supplies Power.

CLASS 4: Asphalt screedman, blaster, all laborers involved in pipejacking and boring operations not exceeding more than 10 feet into pipe, boring or drilled area.

WAGES: (per hour)	07/01/2021	06/01/2022	06/01/2023	06/01/2024
Class 1	\$ 37.40	\$ 39.05	\$ 40.80	\$ 43.45
Class 2	41.80	43.30	44.80	47.15
Class 3	46.15	47.75	49.40	51.85
Class 4	51.15	52.90	54.47	56.90

* When laborers are performing micro paving, crack sealing or slurry application when not part of asphalt prep operations laborers shall receive an additional \$2.50 per hour over rate.

SHIFT DIFFERENTIAL: Night work and irregular shift require 20% increase on wages for all Government mandated night and irregular shift work.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day.
NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour:				
Journeyman	\$ 30.78	\$ 31.53	\$ 32.28	\$ 32.28
Shift	36.27	37.09	37.96	37.96

OVERTIME PAY

See (B, E, P, *R, **S, ***T, X) on OVERTIME PAGE

*For Mon-Fri Holidays, Double Benefits to be paid for all hours worked.

**For Saturday Holidays, Two and one Half Benefits for all hours worked.

***For Sunday Holidays, Triple Benefits for all hours worked.

HOLIDAY

Paid:	See (5, 6, 15, 25) on HOLIDAY PAGE
Overtime:	See (5, 6, 15, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1000) hour terms at the following wages.

	07/01/2021	06/01/2022
1st term	\$ 21.45	\$ 22.22
2nd term	25.35	26.26
3rd term	29.25	30.30
4th term	33.15	34.34

Supplemental Benefits per hour:

All Terms Regular	\$ 25.98	\$ 27.03
All Terms Shift Rate	30.40	TBD

11-17.1H/H

Laborer - Tunnel

11/01/2021

JOB DESCRIPTION Laborer - Tunnel

DISTRICT 11

ENTIRE COUNTIES

Columbia, Dutchess, Greene, Orange, Otsego, Putnam, Rockland, Sullivan, Ulster, Westchester

PARTIAL COUNTIES

Chenango: Townships of Columbus, Sherburne and New Berlin.

Delaware: Townships of Andes, Bovina, Middletown, Roxbury, Franklin, Hamden, Stamford, Delhi, Kortright, Harpersfield, Merideth and Davenport.

WAGES

Class 1: All support laborers/sandhogs working above the shaft or tunnel.

Class 2: All laborers/sandhogs working in the shaft or tunnel.

Class 4: Safety Miners

Class 5: Site work related to Shaft/Tunnel

WAGES: (per hour)

	07/01/2021	07/01/2022
Class 1	\$ 51.95	\$ 53.45
Class 2	54.10	55.60
Class 4	60.50	62.00
Class 5	43.50	44.80

Toxic and hazardous waste, lead abatement and asbestos abatement work will be paid an additional \$ 3.00 an hour.

SHIFT DIFFERENTIAL...On all Government mandated irregular shift work:

- Employee shall be paid at time and one half the regular rate Monday through Friday.
- Saturday shall be paid at 1.65 times the regular rate.
- Sunday shall be paid at 2.15 times the regular rate.

SUPPLEMENTAL BENEFITS

Per hour:

Benefit 1	\$ 33.25	\$ 34.45
Benefit 2	49.81	51.60
Benefit 3	66.35	68.75

Benefit 1 applies to straight time hours, paid holidays not worked.

Benefit 2 applies to over 8 hours in a day (M-F), irregular shift work hours worked, and Saturday hours worked.

Benefit 3 applies to Sunday and Holiday hours worked.

OVERTIME PAY

See (B, E, Q, X) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 15, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 15, 16, 25) on HOLIDAY PAGE

When a recognized Holidays falls on Saturday or Sunday, holidays falling on Saturday shall be recognized or observed on Friday and holidays falling on Sunday shall be recognized or observed on Monday. Employees ordered to work on the Saturday or Sunday of the holiday or on the recognized or the observed Friday or Monday for those holidays falling on Saturday or Sunday shall receive double time the established rate and benefits for the holiday.

REGISTERED APPRENTICES

FOR APPRENTICE RATES, refer to the appropriate Laborer Heavy & Highway wage rate contained in the wage schedule for the County and location where the work is to be performed.

11-17/60/235/754Tun

Lineman Electrician

11/01/2021

JOB DESCRIPTION Lineman Electrician

DISTRICT 6

ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

WAGES

Per hour:

NOTE: Includes Teledata Work within ten (10) feet of High Voltage Transmission Lines

Below rates applicable on all overhead and underground distribution and maintenance work, and all overhead and underground transmission line work and the installation of fiber optic cable where no other construction trades are or have been involved. (Ref #14.01.01)

	07/01/2021	05/02/2022	05/01/2023	05/06/2024
Lineman, Technician	\$ 54.70	\$ 56.00	\$ 57.40	\$ 58.90
Crane, Crawler Backhoe	54.70	56.00	57.40	58.90
Welder, Cable Splicer	54.70	56.00	57.40	58.90

Digging Mach. Operator	49.23	50.40	51.66	53.01
Tractor Trailer Driver	46.50	47.60	48.79	50.07
Groundman, Truck Driver	43.76	44.80	45.92	47.12
Equipment Mechanic	43.76	44.80	45.92	47.12
Flagman	32.82	33.60	34.44	35.34

Additional \$1.00 per hour for entire crew when a helicopter is used.

Below rates applicable on all electrical sub-stations, switching structures, fiber optic cable and all other work not defined as "Utility outside electrical work". (Ref #14.02.01-A)

Lineman, Technician	\$ 54.70	\$ 56.00	\$ 57.40	\$ 58.90
Crane, Crawler Backhoe	54.70	56.00	57.40	58.90
Cable Splicer	60.17	61.60	63.14	64.79
Certified Welder - Pipe Type Cable	57.44	58.80	60.27	61.85
Digging Mach. Operator	49.23	50.40	51.66	53.01
Tractor Trailer Driver	46.50	47.60	48.79	50.07
Groundman, Truck Driver	43.76	44.80	45.92	47.12
Equipment Mechanic	43.76	44.80	45.92	47.12
Flagman	32.82	33.60	34.44	35.34

Additional \$1.00 per hour for entire crew when a helicopter is used.

Below rates apply on switching structures, maintenance projects, railroad catenary install/maintenance third rail installation, bonding of rails and pipe type cable and installation of fiber optic cable. (Ref #14.02.01-B)

Lineman, Tech, Welder	\$ 56.02	\$ 57.32	\$ 58.72	\$ 60.22
Crane, Crawler Backhoe	56.02	57.32	58.72	60.22
Cable Splicer	61.62	63.05	64.59	66.24
Certified Welder - Pipe Type Cable	58.82	60.19	61.66	63.23
Digging Mach. Operator	50.42	51.59	52.85	54.20
Tractor Trailer Driver	47.62	48.72	49.91	51.19
Groundman, Truck Driver	44.82	45.86	46.98	48.18
Equipment Mechanic	44.82	45.86	46.98	48.18
Flagman	33.61	34.39	35.23	36.13

Additional \$1.00 per hour for entire crew when a helicopter is used.

Below rates applicable on all overhead and underground transmission line work & fiber optic cable where other construction trades are or have been involved. This applies to transmission line work only, not other construction. (Ref #14.03.01)

Lineman, Tech, Welder	\$ 57.21	\$ 58.51	\$ 59.91	\$ 61.41
Crane, Crawler Backhoe	57.21	58.51	59.91	61.41
Cable Splicer	57.21	58.51	59.91	61.41
Digging Mach. Operator	51.49	52.66	53.92	55.27
Tractor Trailer Driver	48.63	49.73	50.92	52.20
Groundman, Truck Driver	45.77	46.81	47.93	49.13
Equipment Mechanic	45.77	46.81	47.93	49.13
Flagman	34.33	35.11	35.95	36.85

Additional \$1.00 per hour for entire crew when a helicopter is used.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1ST SHIFT	8:00 AM to 4:30 PM REGULAR RATE
2ND SHIFT	4:30 PM to 1:00 AM REGULAR RATE PLUS 17.3 %
3RD SHIFT	12:30 AM to 9:00 AM REGULAR RATE PLUS 31.4 %

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour worked (but also required on non-worked holidays):

	\$25.40 *plus 7% of hourly Wage	\$ 25.90 *plus 7% of hourly wage	\$ 26.40 *plus 7% of hourly wage	\$ 26.90 *plus 7% of hourly wage
Journeyman Lineman or Equipment Operators with Crane License	\$ 26.40 *plus 7% of hourly wage	\$ 27.90 *plus 7% of hourly wage	\$ 29.40 *plus 7% of hourly wage	\$ 30.90 *plus 7% of hourly wage

*The 7% is based on the hourly wage paid, straight time or premium time.

OVERTIME PAY

See (B, E, Q,) on OVERTIME PAGE. *Note* Double time for all emergency work designated by the Dept. of Jurisdiction.

NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.
Overtime See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.

NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

REGISTERED APPRENTICES

WAGES per hour: 1000 hour terms at the following percentage of the applicable Journeyman Lineman wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

07/01/2021	05/02/2022	05/01/2023	05/06/2024
\$25.40 *plus 7% of hourly Wage	\$ 25.90 *plus 7% of hourly wage	\$ 26.40 *plus 7% of hourly wage	\$ 26.90 *plus 7% of hourly wage

*The 7% is based on the hourly wage paid, straight time or premium time.

6-1249a

Lineman Electrician - Teledata

11/01/2021

JOB DESCRIPTION Lineman Electrician - Teledata

DISTRICT 6

ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

Per hour:

For outside work, stopping at first point of attachment (demarcation).

07/01/2021

Cable Splicer	\$ 34.78
Installer, Repairman	\$ 33.01
Teledata Lineman	\$ 33.01
Tech., Equip. Operator	\$ 33.01
Groundman	\$ 17.50

NOTE: EXCLUDES Teledata work within ten (10) feet of High Voltage (600 volts and over) transmission lines. For this work please see LINEMAN.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED:

1ST SHIFT	REGULAR RATE
2ND SHIFT	REGULAR RATE PLUS 10%

3RD SHIFT

REGULAR RATE PLUS 15%

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman

\$ 5.14

*plus 3% of
wage paid

*The 3% is based on the hourly wage paid, straight time rate or premium rate.

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked.
Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid:

See (1) on HOLIDAY PAGE

Overtime:

See (5, 6, 16) on HOLIDAY PAGE

6-1249LT - Teledata

Lineman Electrician - Traffic Signal, Lighting

11/01/2021

JOB DESCRIPTION Lineman Electrician - Traffic Signal, Lighting

DISTRICT 6

ENTIRE COUNTIES

Columbia, Dutchess, Orange, Putnam, Rockland, Ulster

WAGES

Lineman/Technician shall perform all overhead aerial work. A Lineman/Technician on the ground will install all electrical panels, connect all grounds, install and connect all electrical conductors which includes, but is not limited to road loop wires; conduit and plastic or other type pipes that carry conductors, flex cables and connectors, and to oversee the encasement or burial of such conduits or pipes.

A Groundman/Truck Driver shall: Build and set concrete forms, handle steel mesh, set footer cages, transport concrete in a wheelbarrow, hand or machine concrete vibrator, finish concrete footers, mix mortar, grout pole bases, cover and maintain footers while curing in cold weather, operate jack hammer, operate hand pavement breaker, tamper, concrete and other motorized saws, as a drill helper, operate and maintain generators, water pumps, chainsaws, sand blasting, operate mulching and seeding machine, air tools, electric tools, gas tools, load and unload materials, hand shovel and/or broom, prepare and pour mastic and other fillers, assist digger operator equipment operator in ground excavation and restoration, landscape work and painting. Only when assisting a lineman technician, a groundman/truck driver may assist in installing conduit, pipe, cables and equipment.

A flagger's duties shall consist of traffic control only.
(Ref #14.01.02)

Per hour:	07/01/2021	05/02/2022	05/01/2023	05/06/2024
Lineman, Technician	\$ 48.43	\$ 49.47	\$ 50.60	\$ 51.82
Crane, Crawler Backhoe	48.43	49.47	50.60	51.82
Certified Welder	50.85	51.94	53.13	54.41
Digging Machine	43.59	44.52	45.54	46.64
Tractor Trailer Driver	41.17	42.05	43.01	44.05
Groundman, Truck Driver	38.74	39.58	40.48	41.46
Equipment Mechanic	38.74	39.58	40.48	41.46
Flagman	29.06	29.68	30.36	31.09

Above rates are applicable for installation, testing, operation, maintenance and repair on all Traffic Control (Signal) and Illumination (Lighting) projects, Traffic Monitoring Systems, and Road Weather Information Systems. Includes digging of holes for poles, anchors, footer foundations for electrical equipment; assembly of all electrical materials or raceway; placing of fish wire; pulling of cables, wires or fiber optic cable through such raceways; splicing of conductors; dismantling of such structures, lines or equipment.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1ST SHIFT	8:00 AM TO 4:30 PM REGULAR RATE
2ND SHIFT	4:30 PM TO 1:00 AM REGULAR RATE PLUS 17.3%
3RD SHIFT	12:30 AM TO 9:00 AM REGULAR RATE PLUS 31.4%

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour worked (but also required on non-worked holidays):

	\$25.40 *plus 7% of hourly Wage	\$ 25.90 *plus 7% of hourly wage	\$ 26.40 *plus 7% of hourly wage	\$ 26.90 *plus 7% of hourly wage
Journeyman Lineman or Equipment Operators with Crane License	\$ 26.40 *plus 7% of hourly wage	\$ 27.90 *plus 7% of hourly wage	\$ 29.40 *plus 7% of hourly wage	\$ 30.90 *plus 7% of hourly wage

*The 7% is based on the hourly wage paid, straight time or premium time.

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE. *Note* Double time for all emergency work designated by the Dept. of Jurisdiction.

NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked.

Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid: See (5, 6, 8, 13, 25) on HOLIDAY PAGE and Governor of NYS Election Day.

Overtime: See (5, 6, 8, 13, 25) on HOLIDAY PAGE and Governor of NYS Election Day.

NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

REGISTERED APPRENTICES

WAGES per hour: 1000 hour terms at the following percentage of the applicable Journeyman Lineman wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

07/01/2021	05/02/2022	05/01/2023	05/06/2024
\$25.40 *plus 7% of hourly Wage	\$ 25.90 *plus 7% of hourly wage	\$ 26.40 *plus 7% of hourly wage	\$ 26.90 *plus 7% of hourly wage

*The 7% is based on the hourly wage paid, straight time or premium time.

6-1249aReg8LT

Lineman Electrician - Tree Trimmer

11/01/2021

JOB DESCRIPTION Lineman Electrician - Tree Trimmer

DISTRICT 6

ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

WAGES

Applies to line clearance, tree work and right-of-way preparation on all new or existing energized overhead or underground electrical, telephone and CATV lines. This also would include stump removal near underground energized electrical lines, including telephone and CATV lines.

Per hour:	07/01/2021	01/02/2022	12/31/2023
Tree Trimmer	\$ 27.36	\$ 28.25	\$ 29.80
Equipment Operator	24.19	24.98	26.35
Equipment Mechanic	24.19	24.98	26.35
Truck Driver	20.15	20.80	21.94
Groundman	16.59	17.13	18.07
Flag person	12.50*	12.50*	13.03*

*NOTE: Subject to change due to any minimum wage increases. Rate effective 12/31/2021: \$13.20

SUPPLEMENTAL BENEFITS

Per hour worked (but also required on non-worked holidays):

Journeyman	\$ 9.98 *plus 3% of hourly wage	\$ 10.23 *plus 3% of hourly wage	\$ 10.48 *plus 3% of hourly wage
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* The 3% is based on the hourly wage paid, straight time rate or premium rate.

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid: See (5, 6, 8, 15) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 15, 16, 25) on HOLIDAY PAGE

NOTE: All paid holidays falling on a Saturday shall be observed on the preceding Friday.

All paid holidays falling on a Sunday shall be observed on the following Monday.

6-1249TT

Mason - Building

11/01/2021

JOB DESCRIPTION Mason - Building

DISTRICT 11

ENTIRE COUNTIES

Dutchess, Sullivan, Ulster

PARTIAL COUNTIES

Orange: Entire county except the Township of Tuxedo.

WAGES

Per hour:

	07/01/2021	06/01/2022 Additional	06/01/2023 Additional
Bricklayer	\$ 42.54	\$ 2.35	\$ 2.02
Cement Mason	42.54	2.35	2.02
Plasterer/Stone Mason	42.54	2.35	2.02
Pointer/Caulker	42.54	2.35	2.02

Additional \$1.00 per hour for power saw work

Additional \$0.50 per hour for swing scaffold or staging work

SHIFT WORK: When shift work or an irregular work day is mandated or required by state, federal, county, local or other governmental agency contracts, the following premiums apply:

Irregular work day requires 15% premium

Second shift an additional 15% of wage plus benefits to be paid

Third shift an additional 25% of wage plus benefits to be paid

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 35.49

OVERTIME PAY

Cement Mason See (B, E, Q, W) on OVERTIME PAGE.

All Others See (B, E, Q) on OVERTIME PAGE.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.

REGISTERED APPRENTICES

Wages per hour:

750 hour terms at the following percentage of Journeyman's wage

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Supplemental Benefits per hour

750 hour terms at the following percentage of journeyman supplements

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Apprentices indentured before June 1st, 2011 receive full journeyman benefits

11-5du-b

Mason - Building	11/01/2021
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JOB DESCRIPTION Mason - Building **DISTRICT** 9

ENTIRE COUNTIES
Dutchess, Orange, Putnam, Sullivan, Ulster

WAGES

Per hour:	07/01/2021	12/06/2021	06/06/2022
Building:		Additional	Additional
Tile, Marble,& Terrazzo Mechanic/Setter	\$55.60	\$ 0.43	\$ 0.65

SUPPLEMENTAL BENEFITS

Per Hour:
Journeyworker: \$ 22.41*
+ \$7.66

* This portion of benefits subject to same premium rate as shown for overtime wages.

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE
Double time rate applies after 10 hours

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage per hour:
(Counties of Orange & Putnam)

750 hour terms at the following wage rate:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
1-	751-	1501-	2251-	3001-	3751-	4501-	5251-	6001-	6751-
750	1500	2250	3000	3750	4500	5250	6000	6750	7500
07/01/2021									
\$20.84	\$25.66	\$32.68	\$37.50	\$40.99	\$44.30	\$47.82	\$52.63	\$55.35	\$59.34

Supplemental Benefits per hour:
(Counties of Orange & Putnam)

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$12.55*	\$12.55*	\$15.16*	\$15.16*	\$16.16*	\$17.66*	\$18.66*	\$18.66*	\$16.66*	\$21.91*
+\$0.66	+\$0.71	+\$0.81	+\$0.85	+\$1.23	+\$1.28	+\$1.63	+\$1.68	+\$5.83	+\$6.32

Wages per hour:
(Counties of Dutchess,Sullivan,Ulster)

750 hour terms at the following wage rate:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
1-	751-	1501-	2251-	3001-	3751-	4501-	5251-	6001-	6751-
750	1500	2250	3000	3750	4500	5250	6000	6750	7500

\$19.83	\$23.92	\$25.89	\$29.98	\$32.74	\$36.32	\$39.61	\$42.71	\$44.31	\$47.73
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Supplemental Benefits per hour:
(Counties of Dutchess, Sullivan, Ulster)

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$12.55*	\$12.55*	\$14.66*	\$14.66*	\$15.60*	\$16.16*	\$16.66*	\$17.66*	\$15.66*	\$20.41*
+\$0.65	+\$0.69	+\$0.74	+\$0.78	+\$1.15	+\$1.19	+\$1.53	+\$1.57	+\$6.09	+\$6.18
									9-7/52B

Mason - Building	11/01/2021
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JOB DESCRIPTION Mason - Building **DISTRICT 9**

ENTIRE COUNTIES
Dutchess, Orange, Putnam, Sullivan, Ulster

WAGES

Per hour: 07/01/2021 12/06/2021 06/06/2022

Building Additional Additional

Tile, Marble, &
Terrazzo Finisher \$ 45.74 \$ 0.36 \$ 0.54

SUPPLEMENTAL BENEFITS

Journeyworker:

Per Hour \$ 19.51*
+ \$7.53

*This portion of benefits subject to same premium rate as shown for overtime wages

OVERTIME PAY

See (A, *E, Q) on OVERTIME PAGE
Double time rate applies after 10 hours on Saturdays.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

9-7/88B-tf

Mason - Building	11/01/2021
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JOB DESCRIPTION Mason - Building **DISTRICT 9**

ENTIRE COUNTIES
Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Wages: 07/01/2021 01/03/2022

Marble Cutters & Setters \$ 61.73 Additional \$ 0.95

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker \$ 37.76

OVERTIME PAY

See (B, E, Q, V) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage Per Hour:

750 hour terms at the following wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
1-750	751-1500	1501-2250	2251-3000	3001-3750	3751-4500	4501-5250	5251-6000	6001-6751	6751-7500

\$ 24.70	\$ 27.77	\$ 30.87	\$ 33.94	\$ 37.03	\$ 40.11	\$ 43.20	\$ 46.29	\$ 52.46	\$ 58.64
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Supplemental Benefits per hour:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 20.01	\$ 21.43	\$ 22.83	\$ 24.25	\$ 25.65	\$ 27.07	\$ 28.47	\$ 29.88	\$ 32.70	\$ 35.51

9-7/4

Mason - Heavy&Highway	11/01/2021
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JOB DESCRIPTION Mason - Heavy&Highway

DISTRICT 11

ENTIRE COUNTIES

Dutchess, Sullivan, Ulster

PARTIAL COUNTIES

Orange: Entire county except the Township of Tuxedo.

WAGES

Per hour:

	07/01/2021	06/01/2022 Additional	06/01/2023 Additional
Bricklayer	\$ 43.04	\$ 2.35	\$2.02
Cement Mason	43.04	2.35	2.02
Marble/Stone Mason	43.04	2.35	2.02
Plasterer	43.04	2.35	2.02
Pointer/Caulker	43.04	2.35	2.02

Additional \$1.00 per hour for power saw work

Additional \$0.50 per hour for swing scaffold or staging work

SHIFT WORK: When shift work or an irregular work day is mandated or required by state, federal, county, local or other governmental contracts, the following rates apply:

Irregular work day requires 15% premium

Second shift an additional 15% of wage plus benefits to be paid

Third shift an additional 25% of wage plus benefits to be paid

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 35.49

OVERTIME PAY

Cement Mason See (B, E, Q, W, X)

All Others See (B, E, Q, X)

HOLIDAY

Paid: See (5, 6, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.

REGISTERED APPRENTICES

Wages per hour:

750 hour terms at the following percentage of Journeyman's wage

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Supplemental Benefits per hour

750 hour terms at the following percentage of journeyman supplements

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Apprentices indentured before June 1st, 2011 receive full journeyman benefits

11-5du-H/H

Millwright	11/01/2021
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JOB DESCRIPTION Millwright

DISTRICT 2

ENTIRE COUNTIES

Sullivan, Ulster

WAGES

Per hour: 07/01/2021

Building \$ 36.65

Heavy & Highway 38.65

NOTE ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount subject to any overtime premiums):

- Certified Welders shall receive \$1.75 per hour in addition to the current Millwrights rate provided he/she is directed to perform certified welding.

- For Building work if a work site has been declared a hazardous site by the Owner and the use of protective gear (including, as a minimum, air purifying canister-type chemical respirators) are required, then that employee shall receive a \$1.50 premium per hour for Building work.

- For Heavy & Highway work if the work is performed at a State or Federally designated hazardous waste site where employees are required to wear protective gear, the employees performing the work shall receive an additional \$2.00 per hour over the millwright heavy and highway wage rate for all hours worked on the day protective gear was worn.

- An employee performing the work of a machinist shall receive \$2.00 per hour in addition to the current Millwrights rate. For the purposes of this premium to apply, a "machinist" is a person who uses a lathe, Bridgeport, milling machine or similar type of tool to make or modify parts.

- When performing work underground at 500 feet and below, the employee shall receive an additional \$1.00.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 30.37

OVERTIME PAY

See (B, E, *E2, Q) on OVERTIME PAGE

*Note - Saturday may be used as a make-up day and worked at the straight time rate of pay during a work week when conditions such as weather, power failure, fire, or natural disaster prevent the performance of work on a regular scheduled work day.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

Note: Any holiday that falls on Sunday shall be observed the following Monday. Any holiday that falls on Saturday shall be observed the preceding Friday.

REGISTERED APPRENTICES

Wages per hour:

(1)year terms at the following percentage of journeymans rate.

1st	2nd	3rd	4th
60%	70%	80%	90%

Supplemental Benefits per hour:

Apprentices:

1st term	\$ 13.33
2nd term	25.26
3rd term	26.96
4th term	28.67

2-1163.3

Operating Engineer - Building / Heavy&Highway

11/01/2021

JOB DESCRIPTION Operating Engineer - Building / Heavy&Highway

DISTRICT 11

ENTIRE COUNTIES

Delaware, Orange, Rockland, Sullivan, Ulster

WAGES

CLASS A5: Cranes, Derricks and Pile Drivers 100 tons or more and Tower Cranes, with 140ft boom and over.

CLASS A4: Cranes, Derricks and Pile Drivers 100 tons or more and Tower Cranes, with 100ft to 139ft boom.

CLASS A3: Cranes, Derricks and Pile Drivers 100 tons or more and Tower Cranes with a boom under 100ft.

CLASS A2: Cranes, Derricks and Pile Drivers less than 100 tons with 140ft boom and over.

CLASS A1: Cranes, Derricks and Piler Drivers less than 100 tons with a 100ft to 139ft boom.

CLASS A: Cranes, Derricks and Pile Drivers less than 100 tons with a boom under 100ft.; Autograde Combn. Subgrader, Base Material Spreader and Base Trimmer (CMI and Similar Types); Autograde Pavement profiler (CMI and Similar Types); Autograde Pavement Profiler and Recycle type (CMI and Similar Type); Autograde Placer-Trimmed-Spreader Comb. (CMI & Similar types); Autograde Slipform Paver (CMI & Similar Types); Central Power Plants (all types); Chief of Party; Concrete Paving Machines; Drill (Baur, AML and Similar Types); Drillmaster, Quarrymaster (Down the Hole Drill), Rotary Drill, Self-Propelled Hydraulic Drill, Self-Powered Drill; Draglines; Elevator Graders; Excavator; Front End Loaders (5 yds. and over); Gradalls; Grader-Rago; Helicopters (Co-Pilot); Helicopters (Communications Engineer); Juntann Pile Driver; Locomotive (Large); Mucking Machines; Pavement & Concrete Breaker, i.e., Superhammer & Hoe Ram; Roadway Surface Grinder; Prentice Truck; Scooper (Loader and Shovel); Shovels; Tree Chopper with Boom; Trench Machines (Cable Plow); Tunnel Boring Machine; Vacuum Truck

CLASS B: "A" Frame; Backhoe (Combination); Boom Attachment on Loaders (Rate based on size of Bucket) not applicable to Pipehook; Boring and Drilling Machines; Brush Chopper, Shredder and Tree Shredder, Tree Shearer; Bulldozer (Fine Grade); Cableways; Carryalls; Concrete Pump; Concrete Pumping System, Pump Concrete and Similar Types; Conveyors (125 ft. and over); Drill Doctor (duties incl. Dust Collector Maintenance); Front End Loaders (2 yds. but less than 5 yds.); Graders (Finish); Groove Cutting Machine (Ride on Type); Heater Planer; Hoists (all type Hoists, shall also include Steam, Gas, Diesel, Electric, Air Hydraulic, Single and Double Drum, Concrete, Brick Shaft Caisson, Snorkel Roof, and/or any other Similar Type Hoisting Machines, portable or stationary, except Chicago Boom Type); Long Boom Rate to be applied if Hoist is "Outside Material Tower Hoist"; Hydraulic Cranes-10 tons and under; Hydraulic Dredge; Hydro-Axe; Hydro Blaster; Jacks-Screw Air Hydraulic Power Operated Unit or Console Type (not hand Jack or Pile Load Test Type); Log Skidder; Pans; Pavers (all) concrete; Plate and Frame Filter Press; Pumpcrete Machines, Squeeze-crete & Concrete Pumping (regardless of size); Scrapers; Side Booms; "Straddle" Carrier-Ross and similar types; Winch Trucks (Hoisting); Whip Hammer

CLASS C: Asphalt Curbing Machine; Asphalt Plant Engineer; Asphalt Spreader; Autograde Tube Finisher and Texturing Machine (CMI & Similar types); Autograde Curecrete Machine (CMI & Similar Types); Autograde Curb Trimmer & Sidewalk, Shoulder, Slipform (CMI & Similar Types); Bar Bending Machines (Power); Batchers, Batching Plant and Crusher on Site; Belt Conveyor Systems; Boom Type Skimmer Machines; Bridge Deck Finisher; Bulldozer (except fine grade); Car Dumpers (Railroad); Compressor and Blower Type Units (used independently or mounted on dual purpose Trucks, on Job Site or in conjunction with jobsite, in Loading and Unloading of Concrete, Cement, Fly Ash, Instacrete, or Similar Type Materials); Compressors (2 or 3 in Battery); Concrete Finishing Machines; Concrete cleaning decontamination machine operator; Concrete Saws and Cutters (Ride-on type); Concrete Spreaders (Hetzl, Rexomatic and Similar Types); Concrete Vibrators; Conveyors (under 125 feet); Crushing Machines; Directional Boring Machines; Ditching Machine-small (Ditch-witch, Vermeer, or Similar type); Dope Pots (Mechanical with or without pump); Dumpsters; Elevator; Fireman; Fork Lifts (Economobile, Lull and Similar Types of Equipment); Front End Loaders (1 yd. and over but under 2 yds.); Generators (2 or 3 in Battery); Giraffe Grinders; Grout Pump; Gunnite Machines (excluding nozzle); Hammer Vibrator (in conjunction with Generator); Heavy Equipment Robotics Operator Technician; Hoists-Roof, Tugger, Aerial Platform Hoist & House Cars; Hoppers; Hopper Doors (power operated); Hydro Blaster; Hydraulic Jacking Trailer; Ladders (motorized); Laddervator; Locomotive-dinky type; Maintenance -Utility Man; Master Environmental Maintenance Technician; Mechanics; Mixers (Excepting Paving Mixers); Motor Patrols; Pavement Breakers (small self propelled ride on type-also maintains compressor hydraulic unit); Pavement Breaker-truck mounted; Pipe Bending Machine (Power); Pitch Pump; Plaster Pump (regardless of size); Post Hole Digger (Post Pounder & Auger); Rod Bending Machines (Power); Roller-Black Top; Scales (Power); Seaman pulverizing mixer; Shoulder widener; Silos; Skidsteer (all attachments); Skimmer Machines (boom-type); Steel Cutting Machine (service & maintain); Tam Rock Drill; Tractors; Transfer Machine; Captain (Power Boats); Tug Master (powerboats); Ultra High Pressure Waterjet Cutting Tool System operator/maintenance technician; Vacuum Blasting Machine; Vibrating Plants (used in conjunction with unloading); Welder and Repair Mechanics

CLASS D: Brooms and Sweepers; Chippers; Compressor (single); Concrete Spreaders (small type); Conveyor Loaders (not including Elevator Graders); Engines-large diesel (1620 HP) and Staging Pump; Farm Tractors; Fertilizing Equipment (Operation & Maint. of); Fine Grade Machine (small type); Form Line Graders (small type); Front End Loader (under 1 yard); Generator (single); Grease, Gas, Fuel and Oil supply trucks; Heaters (Nelson or other type incl. Propane, Natural Gas or Flowtype Units); Lights, Portable Generating Light Plants; Mixers (Concrete, small); Mulching Equipment (Operation and Maintenance of); Pumps (2 or less than 4 inch suction); Pumps (4 inch suction and over incl. submersible pumps); Pumps (Diesel Engine and Hydraulic-immaterial of power); Road Finishing Machines (small type); Rollers-grade, fill or stone base; Seeding Equip. (Operation and Maintenance of); Sprinkler & Water Pump Trucks (used on jobsite or in conjunction with jobsite); Steam Jennies and Boilers-irrespective of use; Stone Spreader; Tamping Machines, Vibrating Ride-on; Temporary Heating Plant (Nelson or other type, incl. Propane, Natural Gas or Flow Type Units); Water & Sprinkler Trucks (used on or in conjunction with jobsite); Welding Machines (Gas, Diesel, and/or Electric Converters of any type, single, two, or three in a battery); Wellpoint Systems (including installation by Bull Gang and Maintenance of)

CLASS E: Assistant Engineer/Oiler; Drillers Helper; Maintenance Apprentice (Deck Hand); Maintenance Apprentice (Oiler); Mechanics' Helper; Tire Repair and Maintenance; Transit/Instrument Man

WAGES:(per hour)

	07/01/2021	07/01/2022 Additional
Class A5	\$ 62.52 plus 3.00*	\$ 2.25
Class A4	61.52 plus 3.00*	
Class A3	60.52 plus 3.00*	
Class A2	58.02 plus 3.00*	
Class A1	57.02 plus 3.00*	
Class A	56.02 plus 3.00*	
Class B	54.43 plus 3.00*	

Class C	52.52 plus 3.00*
Class D	50.89 plus 3.00*
Class E	49.18 plus 3.00*
Safety Engineer	56.76 plus 3.00*

Helicopter:	
Pilot/Engineer	57.84 plus 3.00*
Co Pilot	56.02 plus 3.00*
Communications Engineer	56.02 plus 3.00*

Surveying:	
Chief of Party	56.02 plus 3.00*
Transit/Instrument Man	49.18 plus 3.00*
Rod/Chainman	46.60 plus 3.00*
Additional \$0.75 for Survey work Tunnel under compressed air.	
Additional \$0.50 for Hydrographic work.	

*The \$3.00 is added to the Class Base Wage for all hours worked. Additionally, the \$3.00 is subject to the V-Code listed on the OVERTIME CODE Sheet.

**Outside Material Hoist (Class B) receives additional \$ 1.00 per hour on 110 feet up to 199 feet total height, \$ 2.00 per hour on 200 feet and over total height.

- SHIFT WORK: On all Government mandated irregular or off shift work, an additional 15% on straight time hours.

- On HAZARDOUS WASTE REMOVAL or ASBESTOS REMOVAL work, or any state or federally DESIGNATED HAZARDOUS WASTE SITE:

For projects bid on or before April 1, 2020...Where the Operating Engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin and eye protection, the Operating Engineer shall receive the hourly wage plus an additional twenty percent (20%) of that wage for the entire shift.

For projects bid after April 1, 2020...On hazardous waste removal work of any kind, including state or federally designated site where the operating engineer is required to wear level A, B, or C personal protection the operating engineer shall receive an hourly wage rate of his regular hourly wage plus \$5.00 per hour. An operating engineer working at a hazardous waste removal project or site at a task requiring hazardous waste related certification, but who is not working in a zone requiring level A, B, or C personal protection, shall receive an hourly wage rate of his regular rate plus \$ 1.00 per hour. This shall also apply to sites where the level D personal protection is required.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	\$ 32.45
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SHIFT WORK: On all Government mandated irregular or off shift work, an additional 15% on straight time hours.

OVERTIME PAY

See (B, E, Q, *V, X) on OVERTIME PAGE

*15% premium is also required on shift work benefits

HOLIDAY

Paid: See (5, 6, 10, 13, 15) on HOLIDAY PAGE

Overtime: See (5, 6, 10, 13, 15) on HOLIDAY PAGE

Holidays falling on Sunday will be celebrated on Monday.

REGISTERED APPRENTICES

(1) year terms at the following percentage of journeyman's wage.

1st year	60% of Class wage plus \$3.00*
2nd year	70% of Class wage plus \$3.00*
3rd year	80% of Class wage plus \$3.00*
4th year	90% of Class wage plus \$3.00*

*The \$3.00 is added to the Class Base Wage for all hours worked. Additionally, the \$3.00 is subject to the V-Code listed on the OVERTIME CODE Sheet.

Supplemental Benefits per hour:

Apprentices	\$ 32.45
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Operating Engineer - Marine Dredging

11/01/2021

JOB DESCRIPTION Operating Engineer - Marine Dredging

DISTRICT 4

ENTIRE COUNTIES

Albany, Bronx, Cayuga, Clinton, Columbia, Dutchess, Essex, Franklin, Greene, Jefferson, Kings, Monroe, Nassau, New York, Orange, Oswego, Putnam, Queens, Rensselaer, Richmond, Rockland, St. Lawrence, Suffolk, Ulster, Washington, Wayne, Westchester

WAGES

These wages do not apply to Operating Engineers on land based construction projects. For those projects, please see the Operating Engineer Heavy/Highway Rates. The wage rates below for all equipment and operators are only for marine dredging work in navigable waters found in the counties listed above.

Per Hour:	07/01/2021	10/01/2021
CLASS A1 Deck Captain, Leverman Mechanical Dredge Operator Licensed Tug Operator 1000HP or more.	\$ 41.42	\$ 41.42
CLASS A2 Crane Operator (360 swing)	36.91	36.91
CLASS B Dozer, Front Loader Operator on Land	To conform to Operating Engineer Prevailing Wage in locality where work is being performed including benefits.	
CLASS B1 Derrick Operator (180 swing) Spider/Spill Barge Operator Operator II, Fill Placer, Engineer, Chief Mate, Electrician, Chief Welder, Maintenance Engineer Licensed Boat, Crew Boat Operator	35.82	35.82
CLASS B2 Certified Welder	33.72	33.72
CLASS C1 Drag Barge Operator, Steward, Mate, Assistant Fill Placer	32.80	32.80
CLASS C2 Boat Operator	30.89	31.74
CLASS D Shoreman, Deckhand, Oiler, Rodman, Scowman, Cook, Messman, Porter/Janitor	25.66	26.37

SUPPLEMENTAL BENEFITS

Per Hour:

THE FOLLOWING SUPPLEMENTAL BENEFITS APPLY TO ALL CATEGORIES

All Classes A & B	07/01/2021 \$11.98 plus 8% of straight time wage, Overtime hours add \$ 0.63	10/01/2021 \$11.98 plus 8% of straight time wage, Overtime hours add \$ 0.63
All Class C	\$11.68 plus 8% of straight time wage, Overtime hours add \$ 0.48	11.68 plus 8% of straight time wage, Overtime hours add \$ 0.48
All Class D	\$11.38 plus 8%	11.38 plus 8%

of straight time
wage, Overtime hours
add \$ 0.33

of straight time
wage, Overtime hours
add \$ 0.33

OVERTIME PAY

See (B2, F, R) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 26) on HOLIDAY PAGE

4-25a-MarDredge

Operating Engineer - Steel Erectors

11/01/2021

JOB DESCRIPTION Operating Engineer - Steel Erectors

DISTRICT 11

ENTIRE COUNTIES

Delaware, Orange, Rockland, Sullivan, Ulster

WAGES

CLASS A3: Cranes, Derricks and Pile Drivers 100 tons or more and Tower Cranes, with a 140 ft. boom and over.

CLASS A2: Cranes, Derricks and Pile Drivers 100 tons or more and Tower Cranes, with up to a 139 ft. boom and under.

CLASS A1: Cranes, Derricks and Pile Drivers less than 100 tons with a 140 ft. boom and over.

CLASS A: Cranes, Derricks and Pile Drivers less than 100 tons with up to a 139 ft. boom and under.

CLASS B: "A" Frame; Cherry Pickers(10 tons and under); Hoists (all type Hoists, shall also include Steam, Gas, Diesel, Electric, Air Hydraulic, Single and Double Drum, Concrete, Brick Shaft Caisson, Snorkel Roof, and/or any other Similar Type Hoisting Machines, portable or stationary, except Chicago Boom Type); Jacks-Screw Air Hydraulic Power Operated Unit or Console Type (not hand Jack or Pile Load Test Type); Side Booms; Straddle Carrier

CLASS C: Aerial Platform used as Hoist; Compressors (2 or 3 in Battery); Concrete cleaning/ decontamination machine operator; Directional Boring Machines; Elevator or House Cars; Conveyers and Tugger Hoists; Fireman; Fork Lifts; Generators (2 or 3 in Battery); Heavy Equipment Robotics Operator/Technician; Master Environmental Maintenance Technician; Maintenance -Utility Man; Rod Bending Machines (Power); Captain(powerboat); Tug Master; Ultra High Pressure Waterjet Cutting Tool System; Vacuum Blasting Machine; Welding Machines(gas or electric,2 or 3 in battery, including diesels); Transfer Machine; Apprentice Engineer/Oiler with either one compressor or one welding machine when used for decontamination and remediation

CLASS D: Compressor (single); Welding Machines (Gas, Diesel, and/or Electric Converters of any type); Welding System Multiple (Rectifier Transformer type)

CLASS E: Assistant Engineer/Oiler; Maintenance Apprentice (Deck Hand);Drillers Helper; Maintenance Apprentice (Oiler); Mechanics' Helper; Transit/Instrument Man

WAGES:(per hour)

	07/01/2021	07/01/2022 Additional
Class A3	\$ 64.54 plus 3.00*	\$ 2.25
Class A2	62.88 plus 3.00*	
Class A1	60.04 plus 3.00*	
Class A	58.38 plus 3.00*	
Class B	55.59 plus 3.00*	
Class C	52.93 plus 3.00*	
Class D	51.40 plus 3.00*	
Class E	49.64 plus 3.00*	
Vacuum Truck	56.35 plus 3.00*	
Safety Engineer	57.21 plus 3.00*	
Helicopter:		
Pilot/Engineer	60.04 plus 3.00*	
Co Pilot	59.65 plus 3.00*	
Communications Engineer	59.65 plus 3.00*	
Surveying:		
Chief of Party	56.35 plus 3.00*	
Transit/Instrument man	49.64 plus 3.00*	
Rod/Chainman	46.60 plus 3.00*	
Additional \$0.75 for Survey work Tunnels under compressed air.		

Additional \$0.50 for Hydrographic work.

*The \$3.00 is added to the Class Base Wage for all hours worked. Additionally, the \$3.00 is subject to the V-Code listed on the OVERTIME CODE Sheet.

- SHIFT WORK: On all Government mandated irregular or off shift work, an additional 15% on straight time hours.
- On HAZARDOUS WASTE REMOVAL or ASBESTOS REMOVAL work, or any state or federally DESIGNATED HAZARDOUS WASTE SITE:

For projects bid on or before April 1, 2020...Where the Operating Engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin and eye protection, the Operating Engineer shall receive the hourly wage plus an additional twenty percent (20%) of that wage for the entire shift.

For projects bid after April 1, 2020...On hazardous waste removal work of any kind, including state or federally designated site where the operating engineer is required to wear level A, B, or C personal protection the operating engineer shall receive an hourly wage rate of his regular hourly wage plus \$5.00 per hour. An operating engineer working at a hazardous waste removal project or site at a task requiring hazardous waste related certification, but who is not working in a zone requiring level A, B, or C personal protection, shall receive an hourly wage rate of his regular rate plus \$ 1.00 per hour. This shall also apply to sites where the level D personal protection is required.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 32.45

OVERTIME PAY

See (B, E, Q, *V, X) on OVERTIME PAGE

*15% premium is also required on shift work benefits

HOLIDAY

Paid: See (5, 6, 10, 13, 15) on HOLIDAY PAGE

Overtime: See (5, 6, 10, 13, 15) on HOLIDAY PAGE

Holidays falling on Sunday will be celebrated on Monday.

REGISTERED APPRENTICES

(1) year terms at the following percentage of journeyman's wage.

1st year	60% of Class wage plus \$3.00*
2nd year	70% of Class wage plus \$3.00*
3rd year	80% of Class wage plus \$3.00*
4th year	90% of Class wage plus \$3.00*

*The \$3.00 is added to the Class Base Wage for all hours worked. Additionally, the \$3.00 is subject to the V-Code listed on the OVERTIME CODE Sheet.

Supplemental Benefits per hour:

Apprentices \$ 32.45

11-825SE

Painter

11/01/2021

JOB DESCRIPTION Painter

DISTRICT 1

ENTIRE COUNTIES

Columbia, Dutchess, Greene, Orange, Sullivan, Ulster

WAGES

Per hour

	07/01/2021	05/01/2022 Additional
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Brush/Paper Hanger	\$ 35.94	\$ 1.65
Dry Wall Finisher	35.94	
Lead Abatement	35.94	
Sandblaster-Painter	35.94	
Spray Rate	36.94	

See Bridge Painting rates for the following work:

Structural Steel , all work performed on tanks, ALL BRIDGES, towers, smoke stacks, flag poles. Rate shall apply to all of said areas from the ground up.

SUPPLEMENTAL BENEFITS

Per hour

Journey person \$ 24.79

OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED SHIFT(S) OR SINGULAR IRREGULAR SHIFT OF AT LEAST A FIVE (5) DAY DURATION (MONDAY THROUGH FRIDAY), WHEN THE SHIFT STARTS BETWEEN THE HOURS LISTED BELOW:

4:00 PM to 6:30 AM REGULAR RATE PLUS 15%**

OVERTIME ON MULTIPLE SHIFT WORK AND SINGULAR IRREGULAR SHIFT THE SHIFT RATE IS THE BASE RATE

**SHIFT RATE STOPS AFTER 6:30AM

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour

Six (6) month terms at the following percentage of Journey person's wage

1st	2nd	3rd	4th	5th	6th
40%	50%	60%	70%	80%	90%

Supplemental Benefits per hour worked

1st term	\$ 10.89
All others	24.79

1-155

Painter - Bridge & Structural Steel

11/01/2021

JOB DESCRIPTION Painter - Bridge & Structural Steel

DISTRICT 8

ENTIRE COUNTIES

Albany, Bronx, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Kings, Montgomery, Nassau, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

WAGES

Per Hour:

STEEL:

Bridge Painting:	07/01/2021	10/01/2021
	\$ 51.50	\$ 53.00
	+ 8.63*	+ 9.63*

ADDITIONAL \$6.00 per hour for POWER TOOL/SPRAY, whether straight time or overtime.

NOTE: All premium wages are to be calculated on base rate per hour only.

* For the period of May 1st to November 15th, this amount is payable up to 40 hours. For the period of Nov 16th to April 30th, this amount is payable up to 50 hours. EXCEPTION: First and last week of employment, and for the weeks of Memorial Day, Independence Day and Labor Day, where the amount is paid for the actual number of hours worked (no cap).

NOTE: Generally, for Bridge Painting Contracts, ALL WORKERS on and off the bridge (including Flagmen) are to be paid Painter's Rate; the contract must be ONLY for Bridge Painting.

SHIFT WORK:

When directly specified in public agency or authority contract documents for an employer to work a second shift and works the second shift with employees other than from the first shift, all employees who work the second shift will be paid 10% of the base wage shift differential in lieu of overtime for the first eight (8) hours worked after which the employees shall be paid at time and one half of the regular wage rate. When a single irregular work shift is mandated in the job specifications or by the contracting agency, wages shall be paid at time and one half for single shifts between the hours of 3pm-11pm or 11pm-7am.

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker:	07/01/2021	10/01/2021
	\$ 10.90	\$ 10.90
	+ 30.00*	+ 30.60*

* For the period of May 1st to November 15th, this amount is payable up to 40 hours. For the period of Nov 16th to April 30th, this amount is payable up to 50 hours. EXCEPTION: First and last week of employment, and for the weeks of Memorial Day, Independence Day and Labor Day, where the amount is paid for the actual number of hours worked (no cap).

OVERTIME PAY

See (B, F, R) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (4, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage - Per hour:

Apprentices: (1) year terms		
	07/01/2021	10/01/2021
1st year	\$ 20.60	\$ 21.20
	+ 3.45*	+ 3.86*
2nd year	\$ 30.90	\$ 31.80
	+ 5.18*	+ 5.78*
3rd year	\$ 41.20	\$ 42.40
	+ 6.90*	+ 7.70*
Supplemental Benefits - Per hour:		
1st year	\$.25	\$.25
	+ 12.00*	+ 12.24*
2nd year	\$ 10.90	\$ 10.90
	+ 18.00*	+ 18.36*
3rd year	\$ 10.20	\$ 10.90
	+ 24.00*	+ 24.48*

NOTE: All premium wages are to be calculated on base rate per hour only.

8-DC-9/806/155-BrSS

Painter - Line Striping	11/01/2021
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JOB DESCRIPTION Painter - Line Striping

DISTRICT 8

ENTIRE COUNTIES

Albany, Bronx, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Kings, Montgomery, Nassau, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

WAGES

Per hour:

Painter (Striping-Highway):	07/01/2021	07/01/2022
Striping-Machine Operator*	\$ 30.32	\$ 31.53
Linerman Thermoplastic	36.93	38.34

Note: * Includes but is not limited to: Positioning of cones and directing of traffic using hand held devices. Excludes the Driver/Operator of equipment used in the maintenance and protection of traffic safety.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day.

NOTE - In order to use the '4 Day/10 Hour Work Schedule,' as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour paid:	07/01/2021	07/01/2022
Journeyworker:		
Striping Machine Operator:	\$ 10.03	\$ 10.03
Linerman Thermoplastic:	10.03	10.03

OVERTIME PAY

See (B, B2, E2, F, S) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 20) on HOLIDAY PAGE
Overtime: See (5, 20) on HOLIDAY PAGE

REGISTERED APPRENTICES

One (1) year terms at the following wage rates:

	07/01/2021	12/31/2021	07/01/2022
1st Term*:	\$ 15.00	\$ 15.00	\$ 15.00
1st Term**:	14.00	15.00	15.00
1st Term***:	12.50	13.20	13.20
2nd Term:	18.19	18.19	18.92
3rd Term:	24.26	24.26	25.22

*Bronx, Kings, New York, Queens, Richmond, and Suffolk counties

**Nassau and Westchester counties

***All other counties

Supplemental Benefits per hour:

1st term:	\$ 9.16	\$ 9.16	\$ 9.16
2nd Term:	9.16	9.16	10.03
3rd Term:	9.16	9.16	10.03

8-1456-LS

Painter - Metal Polisher

11/01/2021

JOB DESCRIPTION Painter - Metal Polisher

DISTRICT 8

ENTIRE COUNTIES

Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

	07/01/2021
Metal Polisher	\$ 37.13
Metal Polisher*	38.23
Metal Polisher**	41.13

*Note: Applies on New Construction & complete renovation

** Note: Applies when working on scaffolds over 34 feet.

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2021
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Journeyworker:	
All classification	\$ 10.64

OVERTIME PAY

See (B, E, P, T) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 11, 15, 16, 25, 26) on HOLIDAY PAGE
Overtime: See (5, 6, 9, 11, 15, 16, 25, 26) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour:

One (1) year term at the following wage rates:

07/01/2021

1st year	\$ 16.00
2nd year	17.00
3rd year	18.00
1st year*	\$ 16.39
2nd year*	17.44
3rd year*	18.54
1st year**	\$ 18.50
2nd year**	19.50
3rd year**	20.50

*Note: Applies on New Construction & complete renovation

** Note: Applies when working on scaffolds over 34 feet.

Supplemental benefits:

Per hour:

1st year	\$ 7.39
2nd year	7.39
3rd year	7.39

8-8A/28A-MP

Plumber

11/01/2021

JOB DESCRIPTION Plumber

DISTRICT 11

ENTIRE COUNTIES

Orange, Rockland, Sullivan

PARTIAL COUNTIES

Ulster: Only the Townships of Plattekill, Marlboro, Wawarsing, and Shawangunk (except for Wallkill and Shawangunk Prisons).

WAGES

REFRIGERATION: For commercial and industrial refrigeration which means service, maintenance, and installation work where the combined compressor tonnage does not exceed 40 tons.

AIR CONDITIONING: Air conditioning to be installed that is water cooled shall not exceed 25 tons. This will include the piping of the component system and erection of water tower. Air conditioning that is air cooled shall not exceed 50 tons.

WAGES: (per hour)

07/01/2021

Plumber \$ 35.59

Star Certification: an additional \$ 1.00 per hour over scale will be paid to all those who have Star Certification.

Shift Differential: When mandated by the governmental agency, an additional 15% premium will be paid for irregular work day or for 2nd and 3rd shift.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman

\$ 34.07*

*For overtime or shift differential work, \$0.10 is paid at straight time, the remaining balance is paid at the same premium as the wages.

OVERTIME PAY

See (B, G, P, *V) on OVERTIME PAGE

* A portion of the benefit amount is subject to the V code for overtime and shift differential work.

HOLIDAY

Paid: See (5, 6, 13, 15, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 13, 15, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1)year terms at the following wage.

07/01/2021

1st term	\$ 16.02
2nd term	17.80
3rd term	19.58
4th term	23.14
5th term	28.48

Supplemental Benefits per hour:
Apprentices

1st term	\$ 15.42*
2nd term	17.09*
3rd term	18.81*
4th term	22.20*
5th term	27.29*

*For overtime or shift differential work, \$0.10 is paid at straight time, the remaining balance is paid at the same premium as the wages.
11-373 Refrig

Plumber	11/01/2021
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JOB DESCRIPTION Plumber

DISTRICT 11

ENTIRE COUNTIES

Orange, Rockland, Sullivan

PARTIAL COUNTIES

Ulster: Only the Townships of Plattekill, Marlboro, Wawarsing, and Shawangunk (except for Wallkill and Shawangunk Prisons).

WAGES

WAGES:(per hour) 07/01/2021

Plumber/Steamfitter \$ 47.45

Note: For all work 40-60 feet above ground add \$ 0.25 per hour, over 60 feet add \$ 0.50 per hour.

Shift Differential: When mandated by the governmental agency, an additional 15% premium will be paid for irregular work day or for 2nd and 3rd shift.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 42.32*

*For overtime or shift differential work, \$0.10 is paid at straight time, the remaining balance is paid at the same premium as the wages.

OVERTIME PAY

See (B, E, Q, *V) on OVERTIME PAGE

* A portion of the benefit amount is subject to the V code for overtime and shift differential work.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 15, 16) on HOLIDAY PAGE

When a holiday falls on a Saturday, the day prior shall be considered and recognized as the holiday. When a holiday falls on a Sunday, the day proceeding shall be considered and recognized as the holiday to be observed.

REGISTERED APPRENTICES

(1) year terms at the following wages.

07/01/2021

1st term	\$ 16.61
2nd term	21.36
3rd term	26.10
4th term	30.85
5th term	37.96

Supplemental Benefits per hour:

1st term	\$ 14.90*
2nd term	19.11*
3rd term	23.33*
4th term	27.55*
5th term	33.87*

*For overtime or shift differential work, \$0.10 is paid at straight time, the remaining balance is paid at the same premium as the wages.
11-373 SF

Plumber	11/01/2021
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JOB DESCRIPTION Plumber

DISTRICT 8

ENTIRE COUNTIES

Dutchess

PARTIAL COUNTIES

Delaware: Only the Townships of Middletown and Roxbury.

Ulster: Entire county (including Walkill and Shawangunk Prisons in Town of Shawangunk) EXCEPT for remainder of Town of Shawangunk, and Towns of Plattekill, Marlboro, and Wawarsing.

WAGES

Per hour:	07/01/2021
Plumber & Steamfitter	\$ 53.63

SHIFT WORK:

When directly specified in public agency or authority contract documents, shift work outside the regular hours of work shall be comprised of eight (8) hours per shift not including Saturday, Sundays and holidays. One half (1/2) hour shall be allowed for lunch after the first four (4) hours of each shift. Wage and Fringes for shift work shall be straight time plus a shift premium of twenty-five (25%) percent. A minimum of five days Monday through Friday must be worked to establish shift work.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker:	\$ 40.23
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OVERTIME PAY

See (B, E, E2, Q, V) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1)year terms at the following rates:

	07/01/2021
1st year	\$ 20.42
2nd year	28.27
3rd year	32.80
4th year	39.37
5th year	45.39

Supplemental Benefits per hour:

1st year	\$ 17.08
2nd year	21.81
3rd year	25.32
4th year	29.24
5th year	32.21

8-21.2-SF

Plumber - HVAC / Service

11/01/2021

JOB DESCRIPTION Plumber - HVAC / Service

DISTRICT 8

ENTIRE COUNTIES

Dutchess, Putnam, Westchester

PARTIAL COUNTIES

Delaware: Only the townships of Middletown and Roxbury

Ulster: Entire County(including Walkill and Shawangunk Prisons) except for remainder of Town of Shawangunk and Towns of Plattekill, Marlboro, and Wawarsing.

WAGES

Per hour:	07/01/2021
HVAC Service	\$ 40.68 + \$ 4.32*

*Note: This portion of wage is not subject to overtime premium.

SUPPLEMENTAL BENEFITS

Per hour:

07/01/2021

Journeyworker HVAC Service

\$ 26.54

OVERTIME PAY

See (B, F, R) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

HVAC SERVICE

(1)year terms at the following wages:

1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.
\$ 18.50	\$ 21.88	\$ 27.31	\$ 33.56	\$ 36.36
+\$2.37*	+\$2.67*	+\$3.22*	+\$3.84*	+\$4.07*

*Note: This portion of wage is not subject to overtime premium.

Supplemental Benefits per hour:

Apprentices 07/01/2021

1st term	\$ 19.66
2nd term	20.86
3rd term	22.21
4th term	24.02
5th term	25.33

8-21.1&2-SF/Re/AC

Plumber - Jobbing & Alterations

11/01/2021

JOB DESCRIPTION Plumber - Jobbing & Alterations

DISTRICT 8

ENTIRE COUNTIES

Dutchess, Putnam, Westchester

PARTIAL COUNTIES

Ulster: Entire county (including Wallkill and Shawangunk Prisons in Town of Shawangunk) EXCEPT for remainder of Town of Shawangunk, and Towns of Plattekill, Marlboro, and Wawarsing.

WAGES

Per hour: 07/01/2021

Journeyworker: \$ 45.83

Repairs, replacements and alteration work is any repair or replacement of a present plumbing system that does not change existing roughing or water supply lines.

SHIFT WORK:

When directly specified in public agency or authority contract documents, shift work outside the regular hours of work shall be comprised of eight (8) hours per shift not including Saturday, Sundays and holidays. One half (1/2) hour shall be allowed for lunch after the first four (4) hours of each shift. Wage and Fringes for shift work shall be straight time plus a shift premium of twenty-five (25%) percent. A minimum of five days Monday through Friday must be worked to establish shift work.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker

\$ 32.96

OVERTIME PAY

See (B, *E, E2, Q, V) on OVERTIME PAGE

*When used as a make-up day, hours after 8 on Saturday shall be paid at time and one half.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1) year terms at the following wages:

1st year	\$ 19.88
2nd year	22.06

3rd year	23.90
4th year	33.57
5th year	35.46

Supplemental Benefits per hour:

1st year	\$ 10.74
2nd year	12.65
3rd year	16.58
4th year	22.39
5th year	24.32

8-21.3-J&A

Roofer

11/01/2021

JOB DESCRIPTION Roofer

DISTRICT 9

ENTIRE COUNTIES

Bronx, Dutchess, Kings, New York, Orange, Putnam, Queens, Richmond, Rockland, Sullivan, Ulster, Westchester

WAGES

Per Hour: 07/01/2021

Roofer/Waterproofer \$ 45.25
+ \$7.00*

* This portion is not subjected to overtime premiums.

Note: Abatement/Removal of Asbestos containing roofs and roofing material is classified as Roofer.

SUPPLEMENTAL BENEFITS

Per Hour: \$ 28.62

OVERTIME PAY

See (B, H) on OVERTIME PAGE

Note: An observed holiday that falls on a Sunday will be observed the following Monday.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1) year term

1st	2nd	3rd	4th
\$ 15.84	\$ 22.63	\$ 27.15	\$ 33.94
	+ 3.50*	+ 4.20*	+ 5.26*

Supplements:

1st	2nd	3rd	4th
\$ 3.72	\$ 14.47	\$ 17.30	\$ 21.55

9-8R

Sheetmetal Worker

11/01/2021

JOB DESCRIPTION Sheetmetal Worker

DISTRICT 8

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

WAGES

07/01/2021
SheetMetal Worker \$ 44.15
+ 3.37*

*This portion is not subject to overtime premiums.

SHIFT WORK

For all NYS D.O.T. and other Governmental mandated off-shift work:
10% increase for additional shifts for a minimum of five (5) days

SUPPLEMENTAL BENEFITS

Journeyworker \$ 44.20

OVERTIME PAY

OVERTIME: See (B, E, Q,) on OVERTIME PAGE.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 16, 23) on HOLIDAY PAGE

REGISTERED APPRENTICES

1st	2nd	3rd	4th	5th	6th	7th	8th
\$ 16.36	\$ 18.41	\$ 20.46	\$ 22.51	\$ 24.54	\$ 26.60	\$ 29.12	\$ 31.65
+ 1.35*	+ 1.52*	+ 1.69*	+ 1.85*	+ 2.02*	+ 2.19*	+ 2.36*	+ 2.53*

*This portion is not subject to overtime premiums.

Supplemental Benefits per hour:

Apprentices

1st term	\$ 18.96
2nd term	21.34
3rd term	23.71
4th term	26.11
5th term	28.46
6th term	30.82
7th term	32.72
8th term	34.64

8-38

Sprinkler Fitter

11/01/2021

JOB DESCRIPTION Sprinkler Fitter

DISTRICT 1

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

WAGES

Per hour 07/01/2021

Sprinkler \$ 47.19
Fitter

SUPPLEMENTAL BENEFITS

Per hour

Journey person \$ 28.09

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

Note: When a holiday falls on Sunday, the following Monday shall be considered a holiday and all work performed on either day shall be at the double time rate. When a holiday falls on Saturday, the preceding Friday shall be considered a holiday and all work performed on either day shall be at the double time rate.

REGISTERED APPRENTICES

Wages per hour

One Half Year terms at the following wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 22.67	\$ 25.19	\$ 27.46	\$ 29.98	\$ 32.50	\$ 35.02	\$ 37.54	\$ 40.05	\$ 42.57	\$ 45.09

Supplemental Benefits per hour

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 8.27	\$ 8.27	\$ 19.22	\$ 19.22	\$ 19.47	\$ 19.47	\$ 19.47	\$ 19.47	\$ 19.47	\$ 19.47
									1-669.2

Teamster - Building / Heavy&Highway

11/01/2021

JOB DESCRIPTION Teamster - Building / Heavy&Highway

DISTRICT 11

ENTIRE COUNTIES

Dutchess, Orange, Rockland, Sullivan, Ulster

WAGES

GROUP 1: LeTourneau Tractors, Double Barrel Euclids, Athney Wagons and similar equipment (except when hooked to scrapers), I-Beam and Pole Trailers, Tire Trucks, Tractor and Trailers with 5 axles and over, Articulated Back Dumps and Road Oil Distributors, Articulated Water Trucks and Fuel Trucks/Trailers, positions requiring a HAZMAT CDL endorsement.

GROUP 1A: Drivers on detachable Gooseneck Low Bed Trailers rated over 35 tons.

GROUP 2: All equipment 25 yards and up to and including 30 yard bodies and cable Dump Trailers and Powder and Dynamite Trucks.

GROUP 3: All Equipment up to and including 24-yard bodies, Mixer Trucks, Dump Crete Trucks and similar types of equipment, Fuel Trucks, Batch Trucks and all other Tractor Trailers, Hi-Rail Truck.

GROUP 4: Tri-Axles, Ten Wheelers, Grease Trucks, Tillerman, Pattern Trucks, Attenuator Trucks, Water Trucks, Bus.

GROUP 5: Straight Trucks.

GROUP 6: Pick-up Trucks for hauling materials and parts, and Escort Man over-the-road.

WAGES: (per hour)	07/01/2021	05/01/2022	05/01/2023
GROUP 1	\$ 33.91	\$ 34.28	\$ 34.58
GROUP 1A	35.05	35.42	35.72
GROUP 2	33.35	33.72	34.02
GROUP 3	33.13	33.50	33.80
GROUP 4	33.02	33.39	33.69
GROUP 5	32.90	33.27	33.57
GROUP 6	32.90	33.27	33.57

NOTE ADDITIONAL PREMIUMS:

- On projects requiring an irregular shift a premium of 10% will be paid on wages. The premium will be paid for off-shift or irregular shift work when mandated by Governmental Agency.

- Employees engaged in hazardous/toxic waste removal, on a State or Federally designated hazardous/toxic waste site, where the employee comes in contact with hazardous/toxic waste material and when personal protective equipment is required for respiratory, skin, or eye protection, the employee shall receive an additional 20% premium above the hourly wage.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour:

First 40 hours	\$ 39.90	\$ 42.16	\$ 44.59
Over 40 hours	32.40	34.46	36.69

OVERTIME PAY

See (*B, E, **E2, ***P, X) on OVERTIME PAGE

*Holidays worked Monday through Friday receive Double Time (2x) after 8 hours.

**Makeup day limited to the employees who were working on the site that week.

***Sunday Holidays are paid at a rate of double time and one half (2.5x) for all hours worked.

HOLIDAY

Paid: See (5, 6, 15, 25) on HOLIDAY PAGE

Overtime: See (*1) on HOLIDAY PAGE

*See OVERTIME PAY section for when additional premium is applicable on Holiday hours worked.

11-445B/HH

Welder

11/01/2021

JOB DESCRIPTION Welder

DISTRICT 1

ENTIRE COUNTIES

Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

Per hour 07/01/2021

Welder: To be paid the same rate of the mechanic performing the work.*

*EXCEPTION: If a specific welder certification is required, then the 'Certified Welder' rate in that trade tag will be paid.

OVERTIME PAY
HOLIDAY

1-As Per Trade

Overtime Codes

Following is an explanation of the code(s) listed in the OVERTIME section of each classification contained in the attached schedule. Additional requirements may also be listed in the HOLIDAY section.

NOTE: Supplemental Benefits are 'Per hour worked' (for each hour worked) unless otherwise noted

- (AA) Time and one half of the hourly rate after 7 and one half hours per day
- (A) Time and one half of the hourly rate after 7 hours per day
- (B) Time and one half of the hourly rate after 8 hours per day
- (B1) Time and one half of the hourly rate for the 9th & 10th hours week days and the 1st 8 hours on Saturday.
Double the hourly rate for all additional hours
- (B2) Time and one half of the hourly rate after 40 hours per week
- (C) Double the hourly rate after 7 hours per day
- (C1) Double the hourly rate after 7 and one half hours per day
- (D) Double the hourly rate after 8 hours per day
- (D1) Double the hourly rate after 9 hours per day
- (E) Time and one half of the hourly rate on Saturday
- (E1) Time and one half 1st 4 hours on Saturday; Double the hourly rate all additional Saturday hours
- (E2) Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
- (E3) Between November 1st and March 3rd Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather, provided a given employee has worked between 16 and 32 hours that week
- (E4) Saturday and Sunday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
- (E5) Double time after 8 hours on Saturdays
- (F) Time and one half of the hourly rate on Saturday and Sunday
- (G) Time and one half of the hourly rate on Saturday and Holidays
- (H) Time and one half of the hourly rate on Saturday, Sunday, and Holidays
- (I) Time and one half of the hourly rate on Sunday
- (J) Time and one half of the hourly rate on Sunday and Holidays
- (K) Time and one half of the hourly rate on Holidays
- (L) Double the hourly rate on Saturday
- (M) Double the hourly rate on Saturday and Sunday
- (N) Double the hourly rate on Saturday and Holidays
- (O) Double the hourly rate on Saturday, Sunday, and Holidays
- (P) Double the hourly rate on Sunday
- (Q) Double the hourly rate on Sunday and Holidays
- (R) Double the hourly rate on Holidays
- (S) Two and one half times the hourly rate for Holidays

- (S1) Two and one half times the hourly rate the first 8 hours on Sunday or Holidays One and one half times the hourly rate all additional hours.
- (T) Triple the hourly rate for Holidays
- (U) Four times the hourly rate for Holidays
- (V) Including benefits at SAME PREMIUM as shown for overtime
- (W) Time and one half for benefits on all overtime hours.
- (X) Benefits payable on Paid Holiday at straight time. If worked, additional benefit amount will be required for worked hours. (Refer to other codes listed.)

Holiday Codes

PAID Holidays:

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

OVERTIME Holiday Pay:

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays. The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Following is an explanation of the code(s) listed in the HOLIDAY section of each classification contained in the attached schedule. The Holidays as listed below are to be paid at the wage rates at which the employee is normally classified.

- (1) None
- (2) Labor Day
- (3) Memorial Day and Labor Day
- (4) Memorial Day and July 4th
- (5) Memorial Day, July 4th, and Labor Day
- (6) New Year's, Thanksgiving, and Christmas
- (7) Lincoln's Birthday, Washington's Birthday, and Veterans Day
- (8) Good Friday
- (9) Lincoln's Birthday
- (10) Washington's Birthday
- (11) Columbus Day
- (12) Election Day
- (13) Presidential Election Day
- (14) 1/2 Day on Presidential Election Day
- (15) Veterans Day
- (16) Day after Thanksgiving
- (17) July 4th
- (18) 1/2 Day before Christmas
- (19) 1/2 Day before New Years
- (20) Thanksgiving
- (21) New Year's Day
- (22) Christmas
- (23) Day before Christmas
- (24) Day before New Year's
- (25) Presidents' Day
- (26) Martin Luther King, Jr. Day
- (27) Memorial Day
- (28) Easter Sunday

(29) Juneteenth



New York State Department of Labor - Bureau of Public Work
State Office Building Campus
Building 12 - Room 130
Albany, New York 12240

REQUEST FOR WAGE AND SUPPLEMENT INFORMATION

As Required by Articles 8 and 9 of the NYS Labor Law

Fax (518) 485-1870 or mail this form for new schedules or for determination for additional occupations.

This Form Must Be Typed

Submitted By:

(Check Only One)

☐

Contracting Agency

☐

Architect or Engineering Firm

☐

Public Work District Office

Date:

A. Public Work Contract to be let by: (Enter Data Pertaining to Contracting/Public Agency)

1. Name and complete address ☐ (Check if new or change)

Telephone: ()

Fax: ()

E-Mail:

2. NY State Units (see Item 5)

☐ 01 DOT

☐ 02 OGS

☐ 03 Dormitory Authority

☐ 04 State University
Construction Fund

☐ 05 Mental Hygiene
Facilities Corp.

☐ 06 OTHER N.Y. STATE UNIT

☐ 07 City

☐ 08 Local School District

☐ 09 Special Local District, i.e.,
Fire, Sewer, Water District

☐ 10 Village

☐ 11 Town

☐ 12 County

☐ 13 Other Non-N.Y. State
(Describe)

3. SEND REPLY TO ☐ (check if new or change)
Name and complete address:

Telephone:()

Fax: ()

E-Mail:

4. SERVICE REQUIRED. Check appropriate box and provide project information.

☐ New Schedule of Wages and Supplements.

APPROXIMATE BID DATE :

☐ Additional Occupation and/or Redetermination

PRC NUMBER ISSUED PREVIOUSLY FOR
THIS PROJECT :

OFFICE USE ONLY

B. PROJECT PARTICULARS

5. Project Title

Description of Work

Contract Identification Number

Note: For NYS units, the OSC Contract No.

6. Location of Project:

Location on Site

Route No/Street Address

Village or City

Town

County

7. Nature of Project - Check One:

☐ 1. New Building

☐ 2. Addition to Existing Structure

☐ 3. Heavy and Highway Construction (New and Repair)

☐ 4. New Sewer or Waterline

☐ 5. Other New Construction (Explain)

☐ 6. Other Reconstruction, Maintenance, Repair or Alteration

☐ 7. Demolition

☐ 8. Building Service Contract

8. OCCUPATION FOR PROJECT :

☐ Construction (Building, Heavy
Highway/Sewer/Water)

☐ Tunnel

☐ Residential

☐ Landscape Maintenance

☐ Elevator maintenance

☐ Exterminators, Fumigators

☐ Fire Safety Director, NYC Only

☐ Guards, Watchmen

☐ Janitors, Porters, Cleaners,
Elevator Operators

☐ Moving furniture and
equipment

☐ Trash and refuse removal

☐ Window cleaners

☐ Other (Describe)

9. Has this project been reviewed for compliance with the Wicks Law involving separate bidding?

YES ☐ NO ☐

10. Name and Title of Requester

Signature



NEW YORK STATE DEPARTMENT OF LABOR
Bureau of Public Work - Debarment List

**LIST OF EMPLOYERS INELIGIBLE TO BID ON OR BE
AWARDED ANY PUBLIC WORK CONTRACT**

Under Article 8 and Article 9 of the NYS Labor Law, a contractor, sub-contractor and/or its successor shall be debarred and ineligible to submit a bid on or be awarded any public work or public building service contract/sub-contract with the state, any municipal corporation or public body for a period of five (5) years from the date of debarment when:

- Two (2) final determinations have been rendered within any consecutive six-year (6) period determining that such contractor, sub-contractor and/or its successor has WILLFULLY failed to pay the prevailing wage and/or supplements;
- One (1) final determination involves falsification of payroll records or the kickback of wages and/or supplements.

The agency issuing the determination and providing the information, is denoted under the heading 'Fiscal Officer'. DOL = New York State Department of Labor; NYC = New York City Comptroller's Office; AG = New York State Attorney General's Office; DA = County District Attorney's Office.

Debarment Database: To search for contractors, sub-contractors and/or their successors debarred from bidding or being awarded any public work contract or subcontract under NYS Labor Law Articles 8 and 9, or under NYS Workers' Compensation Law Section 141-b, access the database at this link: <https://applications.labor.ny.gov/EDList/searchPage.do>

For inquiries where WCB is listed as the "Agency", please call 1-866-546-9322

NYSDOL Bureau of Public Work Debarment List 10/15/2021

Article 8

AGENCY	Fiscal Officer	FEIN	EMPLOYER NAME	EMPLOYER DBA NAME	ADDRESS	DEBARMENT START DATE	DEBARMENT END DATE
DOL	NYC	*****9839	A.J.S. PROJECT MANAGEMENT, INC.		149 FIFTH AVENUE NEW YORK NY 10010	12/29/2016	12/29/2021
DOL	DOL	*****4018	ADIRONDACK BUILDING RESTORATION INC.		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	AG	*****1812	ADVANCED BUILDERS & LAND DEVELOPMENT, INC.		400 OSER AVE #2300HAUPPAUGE NY 11788	09/11/2019	09/11/2024
DOL	DOL	*****1687	ADVANCED SAFETY SPRINKLER INC		261 MILL ROAD P.O BOX 296EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	NYC	*****6775	ADVENTURE MASONRY CORP.		1535 RICHMOND AVENUE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	NYC		AGOSTINHO TOME		405 BARRETTO ST BRONX NY 10474	05/31/2018	05/31/2023
DOL	NYC		AMJAD NAZIR		2366 61ST ST BROOKLYN NY 11204	12/15/2016	12/15/2021
DOL	NYC		AMJED PARVEZ		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL		ANGELO F COKER		2610 SOUTH SALINA STREET SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		ANGELO F COKER		2610 SOUTH SALINA STREET SUITE 14SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL		ANITA SALERNO		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	NYC		ANTHONY J SCLAFANI		149 FIFTH AVE NEW YORK NY 10010	12/29/2016	12/29/2021
DOL	DOL		ANTHONY PERGOLA		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10323	01/23/2017	01/23/2022
DOL	DOL		ANTONIO ESTIVEZ		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		ARNOLD A. PAOLINI		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	NYC		ARSHAD MEHMOOD		168-42 88TH AVENUE JAMAICA NY 11432	11/20/2019	11/20/2024
DOL	DOL		ARVINDER ATWAL		65 KENNETH PLACE NEW HYDE PARK NY 11040	07/19/2017	07/19/2022
DOL	NYC	*****6683	ATLAS RESTORATION CORP.		35-12 19TH AVENUE ASTORIA NY 11105	08/02/2017	08/02/2022
DOL	NYC	*****5532	ATWAL MECHANICALS, INC		65 KENNETH PLACE NEW HYDE PARK NY 11040	07/19/2017	07/19/2022
DOL	NYC	*****2591	AVI 212 INC.		260 CROSEY AVENUE APT 11GBROOKLYN NY 11214	10/30/2018	10/30/2023
DOL	NYC		AZIDABEGUM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	NYC		BALWINDER SINGH		421 HUDSON ST SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	NYC	*****8416	BEAM CONSTRUCTION, INC.		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	NYC	*****2113	BHW CONTRACTING, INC.		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL		BIAGIO CANTISANI			06/12/2018	06/12/2023
DOL	DOL	*****4512	BOB BRUNO EXCAVATING, INC		5 MORNINGSIDE DR AUBURN NY 13021	05/28/2019	05/28/2024
DOL	DOL		BOGDAN MARKOVSKI		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024
DOL	DOL		BRADLEY J SCHUKA		4 BROTHERS ROAD WAPPINGERS FALLS NY 12590	10/20/2020	10/20/2025
DOL	DOL		BRUCE P. NASH JR.		5841 BUTTERNUT ROAD EAST SYRACUSE NY 13057	09/12/2018	09/12/2023
DOL	DOL	*****0225	C&D LAFACE CONSTRUCTION, INC.		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	01/09/2023
DOL	DOL	*****8809	C.B.E. CONTRACTING CORPORATION		310 MCGUINNESS BLVD GREENPOINT NY 11222	03/07/2017	03/07/2022
DOL	DOL	*****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL	*****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL	*****5161	CALADRI DEVELOPMENT CORP.		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	DOL	*****3391	CALI ENTERPRISES, INC.		1223 PARK STREET PEEKSKILL NY 10566	05/17/2021	05/17/2026

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DOL	NYC		CALVIN WALTERS		465 EAST THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	DOL		CANTISANI & ASSOCIATES LTD		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CANTISANI HOLDING LLC			06/12/2018	06/12/2023
DOL	DOL		CARMEN RACHETTA		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	02/03/2025
DOL	DOL		CARMENA RACHETTA		8531 OSWEGO ROAD BALDWINVILLE NY 13027	02/03/2020	01/09/2023
DOL	DOL	*****3812	CARMODY "2" INC			06/12/2018	06/12/2023
DOL	DOL	*****1143	CARMODY BUILDING CORP	CARMODY CONTRACTIN G AND CARMODY CONTRACTIN G CORP.	442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY CONCRETE CORPORATION			06/12/2018	06/12/2023
DOL	DOL		CARMODY ENTERPRISES, LTD.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY INC		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	*****3812	CARMODY INDUSTRIES INC			06/12/2018	06/12/2023
DOL	DOL		CARMODY MAINTENANCE CORPORATION		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY MASONRY CORP		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	*****8809	CBE CONTRACTING CORP		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	AG		CESAR J. AGUDELO		81-06 34TH AVENUE APT. 6EJACKSON HEIGHTS NY 11372	02/07/2018	02/07/2023
DOL	DOL	*****0026	CHANTICLEER CONSTRUCTION LLC		4 BROTHERS ROAD WAPPINGERS FALLS NY 12590	10/20/2020	10/20/2025
DOL	DOL		CHRISTOPHER GRECO		26 NORTH MYRTLE AVENUE SPRING VALLEY NY 10956	02/18/2021	02/18/2026
DOL	DOL		CHRISTOPHER J MAINI		19 CAITLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	DOL		CHRISTOPHER PAPASTEFANO A/K/A CHRIS PAPASTEFANO		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL	*****1927	CONSTRUCTION PARTS WAREHOUSE, INC.	CPW	5841 BUTTERNUT ROAD EAST SYRACUSE NY 13057	09/12/2018	09/12/2023
DOL	DOL	*****3228	CROSS-COUNTY LANDSCAPING AND TREE SERVICE, INC.	ROCKLAND TREE SERVICE	26 NORTH MYRTLE AVENUE SPRING VALLEY NY 10956	02/18/2021	02/18/2026
DOL	DOL	*****2524	CSI ELECTRICAL & MECHANICAL INC		42-32 235TH ST DOUGLSTON NY 11363	01/14/2019	01/14/2024
DOL	NYC		DALJIT KAUR BOPARAI		185-06 56TH AVE FRESH MEADOW NY 11365	10/17/2017	10/17/2022
DOL	DOL		DANICA IVANOSKI		61 WILLETT ST. PASSAIC NJ 07503	10/26/2016	10/26/2021
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	NYC		DAVID WEINER		14 NEW DROP LANE 2ND FLOORSTATEN ISLAND NY 10306	11/14/2019	11/14/2024
DOL	DOL		DEBBIE STURDEVANT		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	AG		DEBRA MARTINEZ		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL		DELPHI PAINTING & DECORATING CO INC		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL		DF CONTRACTORS OF ROCHESTER, INC.		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	DOL		DF CONTRACTORS, INC.		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	NYC		DIMITRIOS TSOUMAS		35-12 19TH AVENUE ASTORIA NY 11105	08/02/2017	08/02/2022
DOL	DOL		DOMENICO LAFACE		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	01/09/2023

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DOL	DOL	*****3242	DONALD R. FORSAY	DF LAWN SERVICE	1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	DOL		DONALD R. FORSAY		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	NYC		DUARTE LOPES		66-05 WOODHAVEN BLVD. STE 2REGO PARK NY 11374	04/20/2017	04/20/2022
DOL	DOL	*****5175	EAGLE MECHANICAL AND GENERAL CONSTRUCTION LLC		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	DOL		EAST COAST PAVING		2238 BAKER RD GILLET PA 16923	03/12/2018	03/12/2023
DOL	NYC	*****4269	EAST PORT EXCAVATION & UTILITIES		601 PORTION RD RONKONKOMA NY 11779	11/18/2016	11/18/2021
DOL	DOL	*****0780	EMES HEATING & PLUMBING CONTR		5 EMES LANE MONSEY NY 10952	01/20/2002	01/20/3002
DOL	NYC	*****5917	EPOCH ELECTRICAL, INC		97-18 50TH AVE CORONA NY 11368	04/19/2018	04/19/2024
DOL	DOL		FAIGY LOWINGER		11 MOUNTAIN RD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL		FRANK BENEDETTO		19 CATLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	DOL	*****4722	FRANK BENEDETTO AND CHRISTOPHER J MAINI	B & M CONCRETE	19 CAITLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	NYC		FRANK MAINI		1766 FRONT ST YORKTOWN HEIGHTS NY 10598	01/17/2018	01/17/2023
DOL	NYC	*****6616	G & G MECHANICAL ENTERPRISES, LLC.		1936 HEMPSTEAD TURNPIKE EAST MEDOW NY 11554	11/29/2019	11/29/2024
DOL	DOL		GABRIEL FRASSETTI			04/10/2019	04/10/2024
DOL	DOL		GEOFF CORLETT		415 FLAGGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DA		GEORGE LUCEY		150 KINGS STREET BROOKLYN NY 11231	01/19/1998	01/19/2998
DOL	DOL		GIGI SCHNECKENBURGER		261 MILL RD EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	DOL		GIOVANNI LAFACE		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	01/09/2023
DOL	NYC	*****3164	GLOBE GATES INC	GLOBAL OVERHEAD DOORS	405 BARRETTO ST BRONX NY 10474	05/31/2018	05/31/2023
DOL	NYC		GREAT ESTATE CONSTRUCTION, INC.		327 STAGG ST BROOKLYN NY 11206	10/10/2017	10/10/2022
DOL	DOL		GREGORY S. OLSON		P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		HANS RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	NYC	*****3228	HEIGHTS ELEVATOR CORP.		1766 FRONT ST YORKTOWN HEIGHTS NY 10598	01/17/2018	01/17/2023
DOL	DOL	*****5131	INTEGRITY MASONRY, INC.	M&R CONCRETE	722 8TH AVE WATERVLIET NY 12189	06/05/2018	06/05/2023
DOL	DOL		IRENE KASELIS		32 PENNINGTON AVE WALDWICK NJ 07463	05/30/2019	05/30/2024
DOL	DOL	*****9211	J. WASE CONSTRUCTION CORP.		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	DOL		J.A. HIRES CADWALLADER		P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		JAMES C. DELGIACCO		722 8TH AVE WATERVLIET NY 12189	06/05/2018	06/05/2023
DOL	DOL		JAMES J. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL		JAMES LIACONE		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		JAMES RACHEL		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL	*****7993	JBS DIRT, INC.		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL	*****5368	JCH MASONRY & LANDSCAPING INC.		35 CLINTON AVE OSSINING NY 10562	09/12/2018	09/12/2023
DOL	NYC		JENNIFER GUERRERO		1936 HEMPSTEAD TURNPIKE EAST MEADOW NY 11554	11/29/2019	11/29/2024

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DOL	DOL		JIM PLAUGHER		17613 SANTE FE LINE ROAD WAYNEFIELD OH 45896	07/16/2021	07/16/2026
DOL	AG		JOHN ANTHONY MASSINO		36-49 204TH STREET BAYSIDE NY 11372	02/07/2018	02/07/2023
DOL	DOL		JOHN F. CADWALLADER		200 LATTA BROOK PARK HORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL	*****4612	JOHN F. CADWALLADER, INC.	THE GLASS COMPANY	P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		JOHN GOCEK		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL		JOHN LUCIANO			05/14/2018	05/14/2023
DOL	DOL		JOHN WASE		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	AG	*****0600	JOHNCO CONTRACTING, INC.		36-49 204TH STREET BAYSIDE NY 11372	02/07/2018	02/07/2023
DOL	DOL		JON E DEYOUNG		261 MILL RD P.O BOX 296EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	DOL		JORGE RAMOS		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	DOL		JORI PEDERSEN		415 FLAGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DOL		JOSE CHUCHUCA		35 CLINTON AVE OSSINING NY 10562	09/12/2018	09/12/2023
DOL	NYC		JOSEPH FOLEY		66-05 WOODHAVEN BLVD. STE 2REGO PARK NY 11374	04/20/2017	04/20/2022
DOL	NYC		JOSEPH MARTINO		1535 RICHMOND AVENUE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	DOL		JOY MARTIN		2404 DELAWARE AVE NIGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	DOL		JULIUS AND GITA BEHREND		5 EMES LANE MONSEY NY 10952	11/20/2002	11/20/3002
DOL	DOL	*****5062	K R F SITE DEVELOPMENT INC		375 LAKE SHORE DRIVE PUTNAM VALLEY NY 10579	01/23/2017	01/23/2022
DOL	NYC		K.S. CONTRACTING CORP.		29 PHILLIP DRIVE PARSIPPANY NJ 07054	02/13/2017	02/13/2022
DOL	DOL		KARIN MANGIN		796 PHELPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025
DOL	DOL		KATE E. CONNOR		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KATIE BURDICK		2238 BAKER RD GILLET PA 16923	03/12/2018	03/12/2023
DOL	DOL	*****2959	KELC DEVELOPMENT, INC		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KENNETH FIORENTINO		375 LAKE SHORE DRIVE PUTNAM VALLEY NY 10579	01/23/2017	01/23/2022
DOL	DOL		KIMBERLY F. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL	*****3490	L & M CONSTRUCTION/DRYWALL INC.		1079 YONKERS AVE YONKERS NY 10704	08/07/2018	08/07/2023
DOL	DA	*****8816	LAKE CONSTRUCTION AND DEVELOPMENT CORPORATION		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	DOL	*****4505	LARAPINTA ASSOCIATES INC		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	DOL		LAVERN GLAVE		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	06/24/2016	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	06/24/2016	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	01/17/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022

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DOL	DOL	****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	08/14/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	08/14/2017	08/14/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	01/17/2017	09/19/2022
DOL	DA	****4460	LONG ISLAND GLASS & STOREFRONTS, LLC		4 MANHASSET TRL RIDGE NY 11961	09/06/2018	09/06/2023
DOL	AG	****4216	LOTUS-C CORP.		81-06 34TH AVENUE APT. 6EJACKSON HEIGHTS NY 11372	02/07/2018	02/07/2023
DOL	DOL		LOUIS A. CALICCHIA		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	NYC		LUBOMIR PETER SVOBODA		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	NYC		M & L STEEL & ORNAMENTAL IRON CORP.		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	DOL		M ANVER BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL		M. ANVER BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL	****1784	MADISON AVE CONSTRUCTION CORP		39 PENNY STREET WEST ISLIP NY 11795	11/02/2016	11/02/2021
DOL	DOL	****2196	MAINSTREAM SPECIALTIES, INC.		11 OLD TOWN RD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DA		MANUEL P TOBIO		150 KINGS STREET BROOKLYN NY 14444	08/19/1998	08/19/2998
DOL	DA		MANUEL TOBIO		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	NYC		MAREK FABIJANOWSKI		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	NYC		MARTINE ALTER		1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	DOL		MARVIN A STURDEVANT		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	DOL		MASONRY CONSTRUCTION, INC.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	****3333	MASONRY INDUSTRIES, INC.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	NYC		MATINA KARAGIANNIS		97-18 50TH AVE CORONA NY 11368	04/19/2018	04/19/2023
DOL	DOL		MATTHEW P. KILGORE		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	DOL		MAURICE GAWENO		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		MCLEAN "MIKKI BEANE"		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		MCLEAN "MIKKI" DRAKE		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		MCLEAN M DRAKE-BEANE		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL	****9445	MCLEAN M WALSH	ELITE PROFESSION AL PAINTING OF CNY	1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL	****9445	MCLEAN M WALSH	ELITE PROFESSION AL PAINTING OF CNY	1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		MICHAEL LENIHAN		1079 YONKERS AVE UNIT 4YONKERS NY 10704	08/07/2018	08/07/2023
DOL	AG		MICHAEL RIGLIETTI		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL	****4829	MILESTONE ENVIRONMENTAL CORPORATION		704 GINESI DRIVE SUITE 29MORGANVILLE NJ 07751	04/10/2019	04/10/2024

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DOL	NYC	****9926	MILLENNIUM FIRE PROTECTION, LLC		325 W. 38TH STREET SUITE 204NEW YORK NY 10018	11/14/2019	11/14/2024
DOL	NYC	****0627	MILLENNIUM FIRE SERVICES, LLC		14 NEW DROP LNE 2ND FLOORSTATEN ISLAND NY 10306	11/14/2019	11/14/2024
DOL	NYC	****3826	MOVING MAVEN OF NY, INC.		1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	NYC	****3550	MOVING MAVEN, INC		1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	AG		MSR ELECTRICAL CONSTRUCTION CORP.		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL		MUHAMMAD BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL		MUHAMMAD BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	NYC		MUHAMMED A. HASHEM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DA	****9786	NATIONAL INSULATION & GC CORP		180 MILLER PLACE HICKSVILLE NY 11801	12/12/2018	12/12/2023
DOL	DOL	****3684	NATIONAL LAWN SPRINKLERS, INC.		645 N BROADWAY WHITE PLAINS NY 10603	05/14/2018	05/14/2023
DOL	NYC		NICHOLAS FILIPAKIS		7113 FORT HAMILTON PARKWA BROOKLYN NY 11228	12/09/2016	12/09/2021
DOL	DOL	****7429	NICOLAE I. BARBIR	BESTUCCO CONSTRUCTION, INC.	444 SCHANTZ ROAD ALLENTOWN PA 18104	09/17/2020	09/17/2025
DOL	DOL	****6966	NORTH COUNTRY DRYWALL AND PAINT		23167 COUNTY ROUTE 59 DEXTER NY 13634	10/24/2016	10/24/2021
DOL	DOL	****0065	NORTHEAST LANDSCAPE AND MASONRY ASSOC		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10523	01/23/2017	01/23/2022
DOL	DOL	****1845	OC ERECTERS, LLC A/K/A OC ERECTERS OF NY INC.		1207 SW 48TH TERRACE DEERFIELD BEACH FL 33442	01/16/2018	01/16/2023
DOL	NYC	****0818	ONE TEN RESTORATION, INC.		2366 61ST ST BROOKLYN NY 11204	12/15/2016	12/15/2021
DOL	NYC		PARESH SHAH		29 PHILLIP DRIVE PARSIPPANY NJ 07054	02/13/2017	02/13/2022
DOL	DOL		PAULINE CHAHALES		935 S LAKE BLVD MAHOPAC NY 10541	03/02/2021	03/02/2026
DOL	NYC	****9422	PELIUM CONSTRUCTION, INC.		22-33 35TH ST. ASTORIA NY 11105	12/30/2016	12/30/2021
DOL	DOL		PETER M PERGOLA		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10523	01/23/2017	01/23/2022
DOL	DOL		PETER STEVENS		11 OLD TOWN ROAD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DOL		PIERRE LAPORT		224 COUNTY HIGHWAY 138 BROADALBIN NY 12025	03/07/2017	03/07/2022
DOL	DOL	****1543	PJ LAPORT FLOORING INC		224 COUNTY HIGHWAY 138 BROADALBIN NY 12025	03/07/2017	03/07/2022
DOL	NYC	****5771	PMJ ELECTRICAL CORP		7113 FORT HAMILTON PARKWA BROOKLYN NY 11228	12/09/2016	12/09/2021
DOL	DOL	****0466	PRECISION BUILT FENCES, INC.		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025
DOL	NYC	****4532	PROFESSIONAL PAVERS CORP.		66-05 WOODHAVEN BLVD. REGO PARK NY 11374	04/20/2017	04/20/2022
DOL	NYC		RASHEL CONSTRUCTION CORP		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DOL	****1068	RATH MECHANICAL CONTRACTORS, INC.		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	DOL	****2633	RAW POWER ELECTRIC CORP		3 PARK CIRCLE MIDDLETOWN NY 10940	01/30/2018	01/30/2023
DOL	AG	****7015	RCM PAINTING INC.		69-06 GRAND AVENUE 2ND FLOORMASPETH NY 11378	02/07/2018	02/07/2023
DOL	DOL		REGINALD WARREN		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL	****9148	RICH T CONSTRUCTION		107 WILLOW WOOD LANE CAMILLUS NY 13031	11/13/2018	11/13/2023
DOL	DOL		RICHARD MACONE		8617 THIRD AVE BROOKLYN NY 11209	09/17/2018	09/17/2023
DOL	DOL		RICHARD REGGIO		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025

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DOL	DOL	****9148	RICHARD TIMIAN	RICH T CONSTRUCTI ON	108 LAMONT AVE SYRACUSE NY 13209	10/16/2018	10/16/2023
DOL	DOL		RICHARD TIMIAN JR.		108 LAMONT AVE SYRACUSE NY 13209	10/16/2018	10/16/2023
DOL	DOL		RICHARD TIMIAN JR.		108 LAMONT AVE SYRACUSE NY 13209	11/13/2018	11/13/2023
DOL	DOL		ROBBYE BISSEAR		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	01/11/2003	01/11/3003
DOL	DOL		ROBERT A. VALERINO		3841 LANYARD COURT NEW PORT RICHEY FL 34652	07/09/2019	07/09/2024
DOL	DOL		ROBERT BRUNO		3 GAYLORD ST AUBURN NY 13021	11/15/2016	11/15/2021
DOL	DOL		ROBERT BRUNO		5 MORNINGSIDE DRIVE AUBURN NY 13021	05/28/2019	05/28/2024
DOL	NYC		ROBERT HOHMAN		149 FIFTH AVE NEW YORK NY 10010	12/29/2016	12/29/2021
DOL	DOL		RODERICK PUGH		404 OAK ST SUITE 101SYRACUSE NY 13203	07/23/2018	07/23/2023
DOL	DOL	****4880	RODERICK PUGH CONSTRUCTION INC.		404 OAK ST SUITE 101SYRACUSE NY 13203	07/23/2018	07/23/2023
DOL	DOL		ROMEO WARREN		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL		RONALD MESSEN		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL		ROSEANNE CANTISANI			06/12/2018	06/12/2023
DOL	DOL		RYAN ALBIE		21 S HOWELLS POINT ROAD BELLPORT NY 11713	02/21/2017	02/21/2022
DOL	DOL	****3347	RYAN ALBIE CONTRACTING INC		21 S HOWELLS POINT ROAD BELLPORT NY 11713	02/21/2017	02/21/2022
DOL	DOL	****1365	S & L PAINTING, INC.		11 MOUNTAIN ROAD P.O BOX 408MONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL	****7730	S C MARTIN GROUP INC.		2404 DELAWARE AVE NIAGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	NYC	****0349	SAM WATERPROOFING INC		168-42 88TH AVENUE APT.1 AJAMAICA NY 11432	11/20/2019	11/20/2024
DOL	NYC		SANDEEP BOPARAI		185-06 56TH AVE FRESH MEADOW NY 11365	10/17/2017	10/17/2022
DOL	DOL	****9751	SCW CONSTRUCTION		544 OLD ROUTE 23 ACRE NY 12405	02/14/2017	02/14/2022
DOL	NYC	****6597	SHAIRA CONSTRUCTION CORP.		421 HUDSON STREET SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	DOL	****1961	SHANE BURDICK	CENTRAL TRAFFIC CONTROL, LLC.	2238 BAKER ROAD GILLET PA 16923	03/12/2018	03/12/2023
DOL	DOL		SHANE BURDICK		2238 BAKER ROAD GILLET PA 16923	03/12/2018	03/12/2023
DOL	DOL		SHANE NOLAN		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		SHULEM LOWINGER		11 MOUNTAIN ROAD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL	****0816	SOLAR ARRAY SOLUTIONS, LLC		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL	****0440	SOLAR GUYS INC.		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	DOL	****2221	SOUTH BUFFALO ELECTRIC, INC.		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	DOL	****3496	STAR INTERNATIONAL INC		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	08/11/2003	08/11/3003
DOL	DOL	****6844	STEAM PLANT AND CHX SYSTEMS INC.		14B COMMERCIAL AVENUE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL	****9933	STEED GENERAL CONTRACTORS, INC.		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL	****9528	STEEL-IT, LLC.		17613 SANTE FE LINE ROAD WAYNESFIELD OH 45896	07/16/2021	07/16/2026
DOL	DOL		STEFANOS PAPASTEFANO, JR. A/K/A STEVE PAPASTEFANO, JR.		256 WEST SADDLE RIVER RD UPPER SADDLE RIVER NJ 07458	05/30/2019	05/30/2024
DOL	DOL	****9751	STEPHEN C WAGAR		544 OLD ROUTE 23 ACRE NY 12405	02/14/2017	02/14/2022

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DOL	DOL		STEVE TATE		415 FLAGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	NYC		STEVEN GOVERNALE		601 PORTION RD RONKONKOMA NY 11779	11/18/2016	11/18/2021
DOL	DOL		STEVEN MARTIN		2404 DELWARE AVE NIAGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	DOL		STEVEN TESTA		50 SALEM STREET - BLDG B LYNNFIELD MA 01940	01/23/2017	01/23/2022
DOL	NYC	*****5863	SUKHMAN CONSTRUCTION, INC.		185-06 56TH AVE FRESH MEADOW NY 11365	10/17/2017	10/17/2022
DOL	DOL	*****1060	SUNN ENTERPRISES GROUP, LLC		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024
DOL	DOL	*****8209	SYRACUSE SCALES, INC.		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	DOL		TALAILA OCAMPA		1207 SW 48TH TERRACE DEERFIELD BEACH FL 33442	01/16/2018	01/16/2023
DOL	DOL		TERRY THOMPSON		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	DOL		TEST		P.O BOX 123 ALBANY NY 12204	05/20/2020	05/20/2025
DOL	DOL	*****6789	TEST1000		P.O BOX 123 ALBANY NY 12044	03/01/2021	03/01/2026
DOL	DOL	*****5570	TESTA CORP		50 SALEM STREET - BLDG B LYNNFIELD MA 01940	01/23/2017	01/23/2022
DOL	DOL	*****5766	THE COKER CORPORATION	COKER CORPORATIO N	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL	*****5766	THE COKER CORPORATION	COKER CORPORATIO N	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL	*****8311	TRIPLE B FABRICATING, INC.		61 WILLETT ST. PASSAIC NJ 07503	10/26/2016	10/26/2021
DOL	DOL	*****6392	V.M.K CORP.		8617 THIRD AVE BROOKLYN NY 11209	09/17/2018	09/17/2023
DOL	DOL	*****6418	VALHALLA CONSTRUCTION, LLC.		796 PHLEPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025
DOL	NYC	*****7361	VIABLE HOLDINGS, INC.	MOVING MAVEN	1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	DOL		VICTOR ALICANTI		42-32 235TH ST DOUGLSTON NY 11363	01/14/2019	01/14/2024
DOL	NYC		VIKTAR PATONICH		2630 CROSEY AVE BROOKLYN NY 11214	10/30/2018	10/30/2023
DOL	DOL		VIKTORIA RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	NYC		VITO GARGANO		1535 RICHMOND AVE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	NYC	*****3673	WALTERS AND WALTERS, INC.		465 EAST AND THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	DOL		WAYNE LIVINGSTON JR	NORTH COUNTRY DRYWALL AND PAINT	23167 COUNTY ROUTE 59 DEXTER NY 13634	10/24/2016	10/24/2021
DOL	DOL	*****3296	WESTERN NEW YORK CONTRACTORS, INC.		3841 LAYNARD COURT NEW PORT RICHEY FL 34652	07/09/2019	07/09/2024
DOL	DOL		WHITE PLAINS CARPENTRY CORP		442 ARMONK RD	06/12/2018	06/12/2023
DOL	DOL		WILLIAM C WATKINS		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		WILLIAM DEAK		C/O MADISON AVE CONSTR CO 39 PENNY STREETWEST ISLIP NY 11795	11/02/2016	11/02/2021
DOL	DOL	*****4043	WINDSHIELD INSTALLATION NETWORK, INC.		200 LATTA BROOK PARK HORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL	*****4730	XGD SYSTEMS, LLC	TDI GOLF	415 GLAGE AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	NYC		ZAKIR NASEEM		30 MEADOW ST BROOKLYN NY 11206	10/10/2017	10/10/2022
DOL	NYC	*****8277	ZHN CONTRACTING CORP		30 MEADOW ST BROOKLYN NY 11206	10/10/2017	10/10/2022

01 11 00 Description of Work (Section A)

1. Work to be Done

The work to be done under the Contract, in accordance with the Contract Documents, consists of performing, installing, furnishing and supplying all materials, equipment, labor and incidentals necessary or convenient for the construction of SUCF Project No 081058 titled Elevator Modernization and carrying out all of the duties and obligations imposed upon the Contractor by the Contract Documents.

The main features of the work shall include, but not be limited to the following:

COYKENDALL SCIENCE BUILDING:

Elevator

- a. Remove all components of existing elevator including rails and provide a new

Architectural

- b. At all elevator landings, remove wall at the corridor side of hoistway to install new elevator doors. Install new shaftwall and repair adjacent wall, floor and ceiling to match existing finishes. At new conduit routing remove act tile and store for reinstallation at the completion of work. Remove the ceiling in the janitor's closets as per plan and replace with new act ceiling.
- c. Thoroughly sweep floors, walls and ceiling of the elevator machine room. Mop the floors prior to painting.
- d. Paint rooms (floors, walls and ceilings) prior to installation of new equipment.
- e. Patch and repair masonry walls where vents and equipment have been removed.
- f. Construct new fire rated shaftwall around existing ducts penetrating through floor.
- g. Firestop all new and existing openings in elevator machine room walls.
- h. Install a new sump pit on the floor of the hoistways.
- i. Remove existing pit access ladder and replace in kind.]
- j. Apply chrystalline waterproofing full height of elevator pit.

Fire Protection

- k. Remove and replace existing sprinkler piping and sprinkler in elevator machine room and elevator shaft.
- l. Provide new sprinkler piping and side wall sprinkler in bottom of elevator shaft.

HVAC

- m. Remove existing inline exhaust fan with all associated thermostatic, control, ductwork and other accessories. Remove existing louver and vent.
- n. Provide new split direct expansion type air conditioning system with wall mounted indoor unit with all refrigerant piping, thermostat, drain pan, condensate piping, etc. Air cool condensing unit shall be mounted on the penthouse roof with equipment support. Contractor to connect new split system to existing building management system.

Plumbing

- o. Provide new sump pump to existing elevator shaft with all piping and controls and discharge indirectly to existing building sanitary system.

Electrical

- p. Disconnect and remove existing elevator feeder wiring within existing conduits from elevator machine room down to the electrical room. Existing conduit to be capped after wiring removal. Disconnect and remove any transformer, disconnect/switch serving existing elevator.
- q. Provide new electrical panels dp-a & pp-a including wiring and conduit. Panel dp-a feed elevator and panel pp-a which feeds the elevator system and all other elevator system related equipment such as split ac system, lighting, etc.
- r. Provide new elevator feeder and new conduits up to elevator machine room.
- s. Provide new communication outlet inside the elevator machine room, wiring and conduit from elevator machine room to existing communication closet/room on the third floor.
- t. Provide disconnects/switches, transformer serving elevator system including wiring and conduit.
- u. Disconnect and remove existing receptacles and lightnings including all wiring and conduit up to power source serving elevator machine room and elevator shaft. Provide new receptacles, lighting fixtures and occupancy sensor to control the lighting fixtures inside elevator machine room and shafts including wiring and conduit.
- v. Disconnect and remove all wiring and conduit, disconnect/switch serving existing exhaust fan.
- w. Provide disconnect switches including wiring and conduit for any new hvac & plumbing equipment serving the elevator shaft and elevator machine room.

Fire Alarm

- x. Provide control relays and modules in elevator machine room for elevator recall function. Connect elevator to existing fire alarm control panel to be reprogrammed for elevator recall.

HAGGERTY ADMINISTRATION BUILDING:

Elevator

- a. Complete modernization of the two (2) existing overhead geared traction elevator including:
- b. New geared traction hoisting machine
- c. New microprocessor controller solid state motor drives.
- d. New car door operator, car and hall door tracks, hangers, closers and safety interlocks.
- e. New code-compliant fixtures, push buttons and signal operating devices
- f. Hands-free car phone / communications system
- g. Mandated safety devices
- h. New cab enclosure, as selected by building
- i. New car and hoistway wiring, hardware and related components

Architectural

- j. Paint wall at all elevator landings.
- k. Thoroughly sweep floor and walls of the elevator machine room. Mop the floors prior to painting.
- l. Paint rooms (floors and walls) prior to installation of new equipment.
- m. Remove existing door to elevator matching room and replace with rated door and frame.
- n. Firestop all new and existing openings in elevator machine room walls and firestop around the perimeter of top of wall where cmu/steel meets the metal deck.
- o. Infill existing hoistway vent in elevator machine room with reinforced concrete slab.
- p. Install a new sump pit on the floor of the hoistways.

- q. Remove existing pit access ladder and replace in kind.

HVAC

- r. Remove existing propeller type exhaust fan serving elevator machine room with all associated thermostat, controls, and other accessories. Remove existing transfer duct with motorized dampers.
- s. Remove existing grating of top elevator shaft.
- t. Provide new split direct expansion type air conditioning system with wall mounted indoor unit with all refrigerant piping, thermostat, drain pan, condensate piping, etc. Air cool condensing unit shall be mounted on the penthouse roof with equipment support. Contractor to connect new split system to existing building management system.

Plumbing

- u. Provide new sump pump to existing elevator shaft with all piping and controls and discharge indirectly to existing building sanitary system.

Electrical

- v. Disconnect, remove and replace existing panel pp-el inside elevator machine room, feeder within the elevator machine room shall be disconnected and removed. Existing panel feeder within the existing conduit from elevator machine room down to electrical room shall be disconnected and removed, existing conduit to be reused. Disconnect and remove any transformer, disconnect/switch serving existing elevator.
- w. Provide new panel pp-el to feed elevators #1 & #2 and new panel pp-a. Panel pp-a feeds elevator system and all other elevator system related equipment such as split ac system, lighting, etc.
- x. Provide new communication outlet inside elevator machine room, wiring and conduit from elevator machine room to existing communication equipment on the second floor.
- y. Provide disconnects/switches, transformer with all wiring and conduit serving elevator system.
- z. Disconnect and remove existing receptacles and lighting including all wiring and conduit up to power source serving elevator machine room and elevator shaft. Provide all new receptacles, lighting fixtures and occupancy sensor to control the lighting fixtures inside the elevator machine room and shafts including wiring and conduit.
- aa. Disconnect and remove all wiring and conduit, disconnect/switch serving existing exhaust fan.
- bb. Provide disconnect switches including wiring and conduit for any new hvac & plumbing equipment serving the elevator shaft and elevator machine room.

Fire Alarm

- cc. Provide control relays and modules in elevator machine room for elevator recall function. Connect elevator to existing fire alarm control panel to be reprogrammed for elevator recall.

LECTURE CENTER:

Elevator

- a. Complete modernization of the one (1) existing overhead geared traction elevator including:
- b. New geared traction hoisting machine
- c. New microprocessor controller solid state motor drives.

- d. New car door operator, car and hall door tracks, hangers, closers and safety interlocks.
- e. New code-compliant fixtures, push buttons and signal operating devices
- f. Hands-free car phone / communications system
- g. Mandated safety devices
- h. New cab enclosure, as selected by building
- i. New car and hoistway wiring, hardware and related components

Architectural

- j. Paint wall at all elevator landings.
- k. Thoroughly sweep floor and walls of the elevator machine room. Mop the floors prior to painting.
- l. Construct new elevator machine room inside existing mechanical penthouse.
- m. Infill existing hoistway vent in elevator machine room with reinforced concrete slab.
- n. Install a new sump pit on the floor of the hoistways.
- o. Remove existing pit access ladder and replace in kind.

HVAC

- p. Remove existing grating of top elevator shaft.
- q. Provide new split direct expansion type air conditioning system with wall mounted indoor unit with all refrigerant piping, thermostat, drain pan, condensate piping, etc. Air cool condensing unit shall be mounted on the penthouse roof with equipment support. Contractor to connect new split system to existing building management system.

Plumbing

- r. Provide new sump pump to existing elevator shaft with all piping and controls and discharge indirectly to existing building sanitary system.

Electrical

- s. Disconnect and remove existing elevator feeder wiring within existing conduits from elevator machine room down to the electrical room. Existing conduit to be capped after wiring removal. Disconnect and remove any transformer, disconnect/switch serving existing elevator.
- t. Provide new electrical panel hpp-a including wiring and conduit to feed elevator and new panel pp-a. Panel pp-a feeds the elevator system and all other elevator system related equipment such as split ac system, lighting, etc.
- u. Provide new elevator feeder and new conduits from existing cmccb inside mechanical room at penthouse level up to elevator machine room.
- v. Provide new communication outlet inside the elevator machine room, wiring and conduit from elevator machine room to existing communication equipment on the projection level.
- w. Provide disconnects/switches, transformer serving elevator system including wiring and conduit.
- x. Disconnect and remove existing receptacles and lightnings including all wiring and conduit up to power source serving elevator machine room and elevator shaft. Provide new receptacles, lighting fixtures and occupancy sensor to control the lighting fixtures inside elevator machine room and shafts including wiring and conduit.
- y. Disconnect and remove all wiring and conduit, disconnect/switch serving existing exhaust fan.
- z. Provide disconnect switches including wiring and conduit for any new hvac & plumbing equipment serving the elevator shaft and elevator machine room.

Fire Alarm

- aa. Provide control relays and modules in elevator machine room for elevator recall function. Connect elevator to existing fire alarm control panel to be reprogrammed for elevator recall.

SMILEY ART BUILDING:

Elevator

- a. Complete modernization of the one (1) existing overhead geared traction elevator including:
- b. New geared traction hoisting machine
- c. New microprocessor controller solid state motor drives.
- d. New car door operator, car and hall door tracks, hangers, closers and safety interlocks.
- e. New code-compliant fixtures, push buttons and signal operating devices
- f. Hands-free car phone / communications system
- g. Mandated safety devices
- h. New cab enclosure, as selected by building
- i. New car and hoistway wiring, hardware and related components

Architectural

- j. At basement corridor remove portion of ceilings to run new conduit and piping. Infill openings with gwb and patch and repair. Paint entire ceilings as per plan. At storage rooms on the first and second floors, remove portion of shaftwall to install conduit and infill with new shaftwall assembly at the completion of work.
- k. Paint wall at all elevator landings
- l. Thoroughly sweep floors, walls and ceiling of the elevator machine room. Mop the floors prior to painting.
- m. Paint rooms (floors, walls and ceilings) prior to installation of new equipment.
- n. N. Patch and repair masonry walls where vents and equipment have been removed.
- o. Remove existing door to elevator matching room and replace with rated door and frame.
- p. Firestop all new and existing openings in elevator machine room walls.
- q. Infill existing hoistway vent in elevator machine room with reinforced concrete slab.

HVAC

- r. Remove existing wall type exhaust fan serving elevator machine room with all associated thermostat, controls, and other accessories.
- s. Remove existing grating of top elevator shaft.
- t. Provide new split direct expansion type air conditioning system with wall mounted indoor unit with all refrigerant piping, thermostat, drain pan, condensate piping, etc. Air cool condensing unit shall be mounted on the penthouse roof with equipment support. Contractor to connect new split system to existing building management system.

Plumbing

- u. Provide new sump pump to existing elevator shaft with all piping and controls and discharge indirectly to existing building sanitary system.

Electrical

- v. Disconnect and remove existing elevator feeder wiring within existing conduits from elevator machine room down to the electrical room. Existing conduit to be capped after wiring removal. Disconnect and remove any transformer, disconnect/switch serving existing elevator.

- w. Provide new electrical panel pp-a including wiring and conduit to feed the elevator system and all other elevator system related equipment such as split ac system, lighting, etc.
- x. Provide new elevator feeder and new conduits up to elevator machine room.
- y. Provide new communication outlet inside the elevator machine room, wiring and conduit from elevator machine room to existing communication equipment on the second floor.
- z. Provide disconnects/switches, transformer serving elevator system including wiring and conduit.
- aa. Disconnect and remove existing receptacles and lightnings including all wiring and conduit up to power source serving elevator machine room and elevator shaft. Provide new receptacles, lighting fixtures and occupancy sensor to control the lighting fixtures inside elevator machine room and shafts including wiring and conduit.
- bb. Disconnect and remove all wiring and conduit, disconnect/switch serving existing exhaust fan.
- cc. Provide disconnect switches including wiring and conduit for any new hvac & plumbing equipment serving the elevator shaft and elevator machine room.

Fire Alarm

- dd. Provide control relays and modules in elevator machine room for elevator recall function. Connect elevator to existing fire alarm control panel to be reprogrammed for elevator recall.

SOJOURNER TRUTH LIBRARY:

Elevator

- a. Complete modernization of the one (1) existing overhead geared traction elevator and two (2) existing hydraulic elevators including:
- b. New hydraulic jacks, pumps, valves, and motors (2 hydraulic elevators)
- c. New geared traction hoisting machine (1 traction elevator)
- d. New microprocessor controller solid state motor drives.
- e. New car door operator, car and hall door tracks, hangers, closers and safety interlocks.
- f. New code-compliant fixtures, push buttons and signal operating devices
- g. Hands-free car phone / communications system
- h. Mandated safety devices
- i. New cab enclosure, as selected by building
- j. New car and hoistway wiring, hardware and related components

Architectural

- k. Paint wall at all elevator landings.
- l. Thoroughly sweep floor and walls of the elevator machine room. Mop the floors prior to painting.
- m. Paint rooms (floors and walls) prior to installation of new equipment.
- n. Remove existing door to elevator matching room and replace with rated door and frame.
- o. Firestop all new and existing openings in elevator machine room walls and firestop around the perimeter of top of wall where cmu/steel meets the metal deck.
- p. Construct new shaft wall at edge of slab parallel to the existing wall.
- q. Infill existing hoistway vent in elevator machine room with reinforced concrete slab.
- r. Remove existing pit access ladder and replace in kind.

Fire Protection

- s. Provide new sprinkler piping from existing sprinkler piping in main floor up to penthouse house elevator machine room. Provide new sprinklers in elevator 1 machine room.

- t. Provide new sprinkler piping from existing sprinkler piping in concourse down to ground floor elevator 2 machine room. Provide new sprinklers in elevator 2 machine room. Disconnect, remove and replace existing sprinkler piping and sprinkler in elevator 2 shaft as indicated on drawings
- u. Disconnect, remove and replace existing sprinkler piping and sprinkler in elevator 3 machine room and elevator 3 shaft as indicated on drawings.

HVAC

- v. Remove and replace existing inline exhaust fan serving elevator 2 machine room with all associated thermostat, controls, ductwork, etc.
- w. Remove and replace existing ceiling exhaust fan serving elevator 3 machine room with all associated thermostat, controls, ductwork, etc.
- x. Remove existing grating of top elevator shaft.
- y. Provide new split direct expansion type air conditioning systems with wall mounted indoor units with all refrigerant piping, thermostat, drain pan, condensate piping, etc. Air cool condensing unit shall be mounted on wall or on roof equipment support. Contractor to connect new split system to existing building management system. Provide external condensate pump for wall mounted indoor units.

Plumbing

- z. Remove existing sump pump with all associated accessory and controls. Discontinue and cap existing sump pump discharge piping at penetration serving existing sump pump.
- aa. Aa. Provide new sump pump to existing elevator shaft with all piping and controls and discharge indirectly to existing building sanitary system.

Electrical

- bb. Disconnect and remove existing elevator feeder wiring within existing conduits from elevator machine room down to the electrical room. Existing conduit to be capped after wiring removal. Disconnect and remove any disconnect/switch serving existing elevator.
- cc. Provide new electrical panel hp-a to feed elevator #1, elevator #2 and new panel pp-a1 and pp-a2 including wiring and conduit. New panels pp-a1 and pp-a2 feed the elevator system and all other elevator system related equipment such as split ac system, lighting, etc. For elevator #1 and #2 respectively. Provide new electrical panel hp-b to feed elevator #3 and new panel pp-a3 including wiring and conduit. New panel pp-a3 feeds the elevator system and all other elevator system related equipment such as split ac system, lighting, etc.
- dd. Provide new elevator feeder and new conduits up to elevator machine room.
- ee. Provide new communication outlet for elevators #1 & #2 inside the elevator machine room, wiring and conduit from elevator machine room to existing communication equipment inside room m54 on the concourse level. Provide new communication outlet for elevators #3 inside the elevator machine room, wiring and conduit from elevator machine room to existing communication equipment inside room m14 on the main floor.
- ff. Provide disconnects/switches, transformer serving elevator system including wiring and conduit.
- gg. Disconnect and remove existing receptacles and lightnings including all wiring and conduit up to power source serving elevator machine room and elevator shaft. Provide new receptacles, lighting fixtures and occupancy sensor to control the lighting fixtures inside elevator machine room and shafts including wiring and conduit.
- hh. Disconnect and remove all wiring and conduit, disconnect/switch serving existing exhaust fan.
- ii. Provide disconnect switches including wiring and conduit for any new hvac & plumbing equipment serving the elevator shaft and elevator machine room.

Fire alarm

- jj. Provide control relays and modules in elevator machine room for elevator recall function. Connect elevator to existing fire alarm control panel to be reprogrammed for elevator recall.

STUDENT UNION BUILDING:

Elevator

- a. Complete modernization of the three (3) existing geared traction elevators including:
- b. New geared traction hoisting machine
- c. New microprocessor controller solid state motor drives.
- d. New car door operator, car and hall door tracks, hangers, closers and safety interlocks.
- e. New code-compliant fixtures, push buttons and signal operating devices
- f. Hands-free car phone / communications system
- g. Mandated safety devices
- h. New cab enclosure, as selected by building
- i. New car and hoistway wiring, hardware and related components

Architectural

- j. Paint wall at all elevator landings.
- k. Thoroughly sweep floor and walls of the elevator machine room. Mop the floors prior to painting.
- l. Paint rooms (floors and walls) prior to installation of new equipment.
- m. Cut new opening and install frame in tectum wall for new louver through exterior copper wall. Patch and repair copper siding where existing louver has been removed.
- n. Remove existing door to elevator matching room and replace with rated door and frame.
- o. Firestop all new and existing openings in elevator machine room walls and firestop around the perimeter of top of wall where cmu/steel meets the metal deck.
- p. Infill existing hoistway vent in elevator machine room with reinforced concrete slab.
- q. Install a new sump pit on the floor of the hoistways.
- r. Remove existing pit access ladder and replace in kind.

HVAC

- s. Remove existing propeller type exhaust fan serving elevator machine room with all associated thermostat, controls, and other accessories. Remove existing transfer duct with motorized dampers.
- t. Remove existing grating of top elevator shaft.
- u. Provide new split direct expansion type air conditioning system with wall mounted indoor units with all refrigerant piping, thermostat, drain pan, condensate piping, etc. Air cool condensing unit shall be mounted on the penthouse roof with equipment support. Contractor to connect new split system to existing building management system.

Plumbing

- v. Provide new sump pump to existing elevator shaft with all piping and controls and discharge indirectly to existing building sanitary system.

Electrical

- w. Disconnect, remove and replace existing panel pp-el inside elevator machine room, feeder within the elevator machine room shall be disconnected and removed. Existing panel feeder within the existing conduit from elevator machine room down to electrical room shall be disconnected and

removed, existing conduit to be capped after wiring removal. Disconnect and remove any transformer, disconnect/switch serving existing elevator.

- x. Provide new panel pp-el to feed elevators #1, #2 & #3 and new panel pp-a. Panel pp-a feeds elevator system and all other elevator system related equipment such as split ac system, lighting, etc.
- y. Provide new elevator feeder and new conduits up to elevator machine room.
- z. Provide new communication outlet inside the elevator machine room, wiring and conduit from elevator machine room to existing communication closet/room on the third floor.
- aa. Provide disconnects/switches, transformer serving elevator system including wiring and conduit.
- bb. Disconnect and remove existing receptacles and lightnings including all wiring and conduit up to power source serving elevator machine room and elevator shaft. Provide new receptacles, lighting fixtures and occupancy sensor to control the lighting fixtures inside elevator machine room and shafts including wiring and conduit.
- cc. Disconnect and remove all wiring and conduit, disconnect/switch serving existing exhaust fan.
- dd. Provide disconnect switches including wiring and conduit for any new hvac & plumbing equipment serving the elevator shaft and elevator machine room.

Fire Alarm

- ee. Provide control relays and modules in elevator machine room for elevator recall function. Connect elevator to existing fire alarm control panel to be reprogrammed for elevator recall.

2. Work Not Included:

Work not included in the work of the Contract are those items marked "N.I.C"; movable furnishings, except those specifically specified or indicated on the Drawings; and items marked "by others".

01 11 13 Coordination with Other Contracts

- 1. There may be other contracts let for work to be done in and/or adjacent to work areas of this Contract during the work period of this Contract. This Contractor and such other contractors shall coordinate their work to conform to the progressive operation of all the work covered by such contracts, and afford each other reasonable opportunities for the introduction and storage of their supplies, materials, equipment, and the execution of their work. Refer to Section 2.16 of the Agreement.
- 2. Where work is turned over from/to others, perform the following:
 - a. At least two weeks prior to the turnover date, inspect the work provided by others with the Consultant. In accordance with Section 2.12(2) of the Agreement, notify the Consultant of apparent discrepancies or defects in such other construction that would render it unsuitable for the proper execution and results required by this Contract.
 - b. At least two weeks prior to the turnover date, inspect the work of this Contract to be turned over to others with the Consultant and perform corrective work, if any, as determined by the Consultant, prior to the scheduled turnover date.
- 3. If there are other contracts let for work to be done in and/or adjacent to work areas, those contracts will have requirements for policies of insurance that are similar to Article V of the

Contractor's Agreement, but with coverage and limits commensurate with the work of those other contracts, as determined by the campus and/or letting agency. If requested by the Contractor, a copy of the contract documents will be made available for review within 15 calendar days after the receipt of the request.

Projects to Coordinate with:

081069 – Rehab Stairs, Ramps and Walkways – Campus Wide

081070 – Rehabilitate 3rd Floor and Multi-Purpose Room, Student Union

081077 – Replace Roofs – Coykendall, Resnick and Terrace Restaurant

01 18 13 Utility Shutdowns and Cutovers

1. Except as otherwise expressly provided in the Contract Documents, the Contractor shall be responsible for submitting to the Consultant and the Fund, for their approval, a proposed schedule of all utility shutdowns and cutovers of all types which will be required to complete the Project; said schedule should contain a minimum of eight (8) weeks' advance notice prior to the time of the proposed shutdown and cutover. Most campuses of the State University of New York are in full operation 12 months of the year, and shutdowns and cutovers, depending upon their type, generally must be scheduled on weekends, at night, or during holiday periods. The contract consideration is deemed to include all necessary overtime and all premium time, if any, that is required by the Contractor to complete the shutdowns or cutovers.
2. In the event the Contractor shall disrupt any existing services, the Contractor shall immediately make temporary connection to place such service back into operation and maintain the temporary connection until the Contractor makes the permanent connection. All work must be acceptable to the Consultant and the Fund.

01 21 43 Time Allowances

Time Delay Allowance: In addition to the requirements of Article III of the Agreement, the base bid contract duration to perform the work specified in the proposal shall include not less than five (5) consecutive and/or non-consecutive eight hour working days in the Time Progress Schedule for delays that are of no fault of the Contractor or any of its subcontractors or suppliers or caused by events or conditions that could not be reasonably anticipated. Provide notice of delay per Section 3.04 and request use of this time allowance. When approved by Consultant, the time allowance is expended for each workday that the contractor is unable to work and all delay time used is tracked in the Time Progress Schedule. After this base bid time allowance for delay is expended, comply with the requirements of Article III for any additional delays.

01 23 00 Alternates (Section B)

1. General
 - a. The extent and details of the Alternates are indicated on the Drawings and described in the Project Manual.
 - b. Where reference is made in the description of the Alternate to products, materials, or workmanship, the specification requirements applicable to products, materials or workmanship in the Total Bid shall govern the products, materials, and workmanship of

the Alternate as if these specification requirements were included in full in the description of the Alternates.

2. Alternates
"NONE"

01 26 13 Requests for Information

1. In the event that the Contractor determines that some portion of the Drawings and Project Manual for the project requires clarification or interpretation by the Consultant per Section 2.01 of the Agreement, the Contractor shall submit a Request for Information (RFI) in writing to the Consultant. The Contractor shall create an RFI log in a format approved by the Consultant. Submit the RFI log to the consultant prior to each periodic Field Meeting. Update the RFI log to reflect comments received at the Field Meetings. The Contractor shall define the issue that requires clarification or interpretation in clear and concise language as follows:
 - a. The Contractor shall customize RFI forms and logs for this project and submit them to the Consultant for review and approval prior to submission of any RFIs.
 - b. Forms should include provisions for the Consultant's response, Contractor acceptance of response or rephrasing of question, and the Consultant's additional response if requested.
 - c. Forms should include provisions for locating the issue within the building, by room number, name and nearest columns.
 - d. RFIs shall confirm that reasonable locations for the information required have been reviewed and document those locations by specific references to the Drawings and Project Manual on the RFI.
 - e. The Contractor shall review the RFI for systemic or global implications, including review of other pending RFIs and work of other phases, so that the final RFI submitted represents a reasonable consolidation of similar requests.
 - f. The Contractor shall coordinate and review the RFIs originating from its trades, subcontractors, suppliers, manufacturers, etc. for compliance with this process, including polling them and meeting with them onsite to review the issue prior to its submission as an RFI. The Consultant may attend such meetings.
 - g. Contractor to coordinate response from Consultant with subcontractors.
 - h. The RFI shall contain a description of what the Contractor believes to be the intent of the design documents, with due regard to Section 1.06 of the Agreement, along with reasons why the RFI is required.
 - i. RFIs shall only be submitted on the approved forms.
 - j. RFIs that do not comply with the above requirements will be returned to the Contractor for revision and resubmission.

2. The Consultant will review all RFIs to determine whether they are RFIs within the meaning of this term as defined above. If the Consultant determines that the document submitted is not an RFI, it will be returned to the Contractor un-reviewed as to content, for resubmission in the proper manner and it will be removed from the RFI log.
3. The Consultant will respond to all RFIs within 10 business days of its receipt, unless the Consultant determines that a longer time is required for an adequate, coordinated response. If the longer response time is deemed necessary, the Consultant will notify the Contractor of that necessity and indicate when the response will be completed within 10 business days of its original receipt.
4. Based on projects of similar complexity, it is anticipated that there may be up to 250 RFIs on this project and that multiple responses may be required to adequately answer each RFI.
5. Responses to RFIs shall not change any requirements of the documents.

01 26 43 Amendments (Section E)

1. Amend the Agreement as follows:

In Article I, Section 1.12, Notices, after the "The State University Construction Fund" in the line starting with Name, insert "Natalie Christman"; in the line starting with Title, insert "Associate Project Coordinator"; in the line starting with Address, insert "H. Carl McCall SUNY Building, 353 Broadway, Albany New York 12246"; and in the line starting with Telephone Number, insert "518-320-1783" and in the line starting with E-mail address, insert "Natalie.Christman@suny.edu".

2. Amend the Agreement as follows:

In Article V, Section 5.06 is amended as follows:

In Section 5.06 (2) (a), Delete the last sentence and insert the following in its place: "The limits under such policy shall not be less than: \$2,000,000 each occurrence; \$2,000,000 general aggregate; and products/completed operations with an aggregate limit of \$2,000,000."

3. Amend the Agreement as follows

- a. In Article VI, Section 6.03, Part (2) Contract Goals, DELETE paragraph (a) in its entirety and replace with the following:

"a. For purposes of this **Contract**, the Fund hereby establishes goals of 10% for Minority-Owned Business Enterprises ("MBE") participation and 10% for Women-Owned Business Enterprises ("WBE") participation (**collectively, "MWBE Contract Goals"**).

i. The 10% goal for Minority-Owned Business Enterprise participation shall be applied as follows: a maximum of one third (1/3) of the goal may be applied to purchases of materials, supplies, and equipment from MBEs.

ii. The 10% goal for Women-Owned Business Enterprise participation shall be applied as follows: a maximum of one third (1/3) of the goal may be applied to purchases of materials, supplies, and equipment from WBEs.”

4. Amend the Agreement as follows:

In Article II, Section 2.20, paragraph 1(b), 12th line, after the word “Section” ADD the following: “except for the single source shown in Specification Sections 28 31 11 Modification and Addition to Existing Addressable Fire alarm system where the use of another product is not permitted.”

5. Amend the Agreement as follows:

In Article IX, Use of Service-Disabled Veteran-Owned Business Enterprises in Contract Performance, paragraph (5), change “«SDVOB_goal»%” to “3%”

01 29 00 10 Payment to Campus for Utilities

Where meters are specified for temporary power, water, steam/HTHW, gas or other utility, the contractor shall read the meters monthly in the presence of Campus and Site Representative. Submit documentation of the utility usage in writing within seven days reading a meter. The Campus may bill the Contractor for utility usage on a monthly basis. Bills shall be paid by the Contractor within 30 days of receiving progress payments covering the utility usage.

01 31 00 Project Management Procedures

The SUCF booklet titled “*Management of Design & Construction Manual*” contains forms, schedules sample documents, communications protocols, procedural requirements for meetings, submittals, reporting, testing, inspection, demonstration, acceptance, payments, changes, turnover, closeout and other administrative requirements. With specific direction from the Fund, the Contractor shall comply with the applicable construction phase requirements in the “*Management of Design & Construction Manual*” during the work of the Contract. Current versions of the forms are available at the SUCF website:

https://sucf.suny.edu/sites/default/files/docs/ManagementOfDesignConstructionManual_3-2021.pdf

01 31 00 10 Single Contract Responsibility

The Agreement with the Contractor is for a single contract to provide all work shown and specified. Any reference to separate electrical, communications, mechanical, plumbing, etc. contracts, unless clearly designated with another contract number or as “NIC”, shall refer to the Contractor. Any reference to “Consultant”, “Engineer”, “Landscape Consultant”, etc. shall be deemed to refer to the Consultant defined in Article 1.01 of the Agreement.”

01 31 00 20 Sheet-metal Fittings and Ductwork

The Contractor’s base bid shall include all sheet metal fittings necessary for the routing of the duct systems shown on the contract drawings for the Project. The straight duct sections shown on the contract drawings may not provide the required routing to achieve the connections due to coordination with other trades (and existing conditions). The amount of these additional fittings may be up to 35% of the total ductwork shown (by weight) on the project contract drawings. Fittings include elbows, transitions, offsets, taps,

tees, branches, and all non-straight ductwork of all types and configurations; plus related insulations, linings, supports and appurtenances. Additional fittings required by field conditions encountered after the approval of the Coordinated Drawings shall be the sole responsibility of the Contractor and shall be installed at no additional cost to the Fund.

01 31 10 Language Requirement

All spoken and written communications, submittals, signage, and other media regarding the Project shall be in the English language unless otherwise agreed to by the Fund. If any original documents required for the Project are in any other language, provide an English translation, which shall take precedence in the event of conflict with the original language. When technically feasible, use gender neutral terminology in lieu of gendered.

01 31 13 10 Exploratory Demolition

1. Perform exploratory demolition to discover subsurface and other physical conditions that differ substantially from those shown on or described or indicated on the Contract Drawings. Exploratory demolition shall begin upon receipt of the Notice to Proceed and occur in locations selected in coordination with the Consultant. Exploratory demolition includes removal of portions of the building and site construction, improvements, systems, fixtures and finishes. Perform demolition in a controlled manner so as to not affect Asbestos Containing Materials, Presumed Asbestos Containing Materials, Mechanical, Electrical, Plumbing and other building systems in ceilings, wall cavities, pipe chases and other concealed spaces. Where required to expose existing conditions, perform selective abatement of asbestos and other work in Divisions 2 through 28 of the technical specifications. Provide access to the Consultant to visually inspect conditions uncovered. As required by Section 2.12 of the Agreement, notify the Consultant of physical conditions discovered during exploratory demolition. Provide temporary barriers and coverings over the uncovered areas. Provide control measures to properly limit the spread of dust, debris, and other materials. Legally dispose of debris generated during the selective exploratory demolition.
2. Exploratory demolition shall be paid for as a Field Order in accordance with Section 4.05A of the Agreement, except for the following work, which is part of the base bid: "None"

01 31 19 Field Meetings

Periodic job meetings will be scheduled by the Consultant during the course of construction. The Contractor, and, upon request of the Consultant or the Fund, its principal subcontractors and manufacturer's representatives, shall attend such meetings and be prepared to furnish answers to questions on progress, workmanship, requests for Information, supplementary information, scope and price for extra work, if any, or any other subject on which the Consultant or the Fund might reasonably require information.

1. In addition to the requirements of Section 3.06 of the Agreement, the Contractor shall submit bi-weekly reports to the Consultant summarizing the last two weeks of work and next two weeks of work anticipated, listing the percent of work complete by trade, tabulating manpower utilized / projected, relevant shop drawing and submittals progress, relevant offsite fabrication progress and providing other information which may be reasonably required to understand the progress of the work.

2. In addition to the above referenced meetings, the Contractor shall schedule and manage periodic coordination meetings at the site between it and all its trades, subcontractors, suppliers, manufacturers, etc. to settle the allotment of work per Article I, Section 1.07 of the Agreement and to review progress on submittals and shop drawing, progress on installation of the work, conflicts between work of trades, compliance with the design intent, adherence to the Contractor's schedule, quality control, planning for commissioning and training of campus personnel, and other items which require coordination and sharing of information. Representatives of the Consultant and the Fund may attend these meetings to observe and make comments. These meetings shall be held a minimum of once per month and more frequently where required to effectively coordinate the construction. The Contractor shall prepare and distribute summary minutes of these meetings within 5 working days of the meeting, in accordance with the "Document Tracking and Change Control Paragraph" of this section. Distribution of the coordination meeting minutes shall be to all attendees with copies to the Fund and Consultant whether they are in attendance or not.
3. The personnel representing the Contractor and its principal subcontractors shall have the authority to make decisions directly affecting the work.
4. In addition to the above meetings, meet to review fire safety periodically during the work and, starting approximately sixteen weeks prior to the scheduled date of substantial completion, the Contractor's principals, project manager and those of its significant subcontractors shall attend additional weekly meetings with the Owner and its consultant(s) to review the progress on preparing close out deliverables, including those in Sections 01 78 23, Operating Instructions and Manuals, 01 78 36, Warranties and 01 79 00, Training of Campus Personnel.

01 31 19 10 Mock ups

1. Progress on the completion of mock ups specified in Divisions 2 through 48 shall be addressed by the Contractor at periodic meetings.
2. Provide a list of mock ups with their dates for installation to begin, installation completion, Consultant review period (which may be up to 15 working days), punch list corrections, and mock up acceptance.
3. For compliance with Section 3.03 of the Agreement, a mock up shall be considered a Sample. Accepted mock ups shall be clearly segregated and marked and remain undisturbed and accessible during the work.
 - a. Accepted mock ups are the Sample and the criteria against which the remaining work shall be judged.
 - b. Spaces with interior mockups shall have the scheduled lighting fixtures installed, or the equivalent temporary lighting, as approved by the Consultant, during the review and approval period.
 - c. Remove markings when directed by the Consultant.
 - d. Promptly record mock up locations on the Record Drawings.
 - e. Where the markings have been removed and no record exists as to which surface was the mock up, the Consultant may either select a different surface as the mock up or direct the Contractor to install another one, at no additional cost to the owner.

- f. Unless an accepted mock up is specified to remain in Divisions 2 through 48, demolish and remove mockups when directed by the Consultant.
- 4. Installation methods, environmental conditions and other contractor employed means and methods for installing the mock up may be observed by the Consultant and shall be employed and maintained in all remaining work. Workers performing the mock up work shall be employed for installation the remaining work. At any time during the remaining work, if additional workers are employed, they may be requested to demonstrate competency by providing a mock up of their work.
- 5. In addition to the mock ups that are specified in Divisions 1 through 48, inclusive and for the purposes of determining if workers are suitable and competent in accordance with Section 2.07 of the Agreement, the Consultant may direct the Contractor to have workers provide mock ups to demonstrate their ability to properly perform their work prior to performing work that will be part of the completed Project.

01 31 19 33 Pre-Installations Meetings

- 1. Attend meetings to coordinate the efforts of all concerned parties with construction activities and to demonstrate that adequate preparations for particular construction activities have been completed. These meetings are required for any mobilization, demolition work, excavation, removal of any demolished or excavated material from the site, LEED related work, concrete work, steel erection, waterproofing, roofing, utility shutdowns or taps, commissioning or campus training related work and where required within each specific section of the specifications. The meeting should be attended by the following:
 - a. Consultant
 - b. Construction Fund
 - c. Campus
 - d. Contractor's Superintendent
 - e. Subcontractor's Superintendent / Foreman, as applicable.
 - f. Material and/or Equipment Manufacturer's Representatives, as applicable.
 - g. Review and discuss applicable requirements of the work for the following:
 - 1) Compliance with Contract documents and related field or change orders
 - 2) Submittals, products, and mock-ups
 - 3) Manufacturer's recommendations
 - 4) Warranty requirements
 - 5) Employment of competent and suitable workers and equipment
 - 6) Deliveries, storage, and handling
 - 7) Possible conflicts and compatibility problems
 - 8) Schedule
 - 9) Weather limitations
 - 10) Compatibility of materials
 - 11) Acceptance of substrates
 - 12) Quality Assurance
 - 13) Testing and inspecting requirements (including Special Inspections)
 - 14) Temporary facilities and controls
 - 15) Space and access limitations
 - 16) Regulations of authorities having jurisdiction
 - 17) Required performance results

- 18) Protection of completed construction
- 19) Other factors that may reasonably apply to the work

01 31 26 Document Tracking and Change Control

1. The Contractor shall maintain a computerized document and change control system to prepare, monitor status, and electronically file and send all documents and changes associated with, and required for the Project. If this system is different than the system required in Section 01 33 23, Shop Drawings and Samples, customize and configure this system as required to provide optimal coordination with the system required in Section 01 33 23.
2. The Contractor must have a MAPI-compliant e-mail system, such as Microsoft Outlook or Exchange.
3. The Contractor must provide experienced and trained personnel to maintain the document control system per this requirement. If the Consultant or the Fund determines that experienced personnel are not operating the control system, then the Contractor's personnel must attend the minimum training at Contractor's sole expense.

01 32 13 Special Project Schedule/Phasing

1. The project requires special phasing to include the following;
 - a. The project includes elevator upgrades at:

i. Sojourner Truth Library	3 elevators
ii. Haggerty Administration Building	2 elevators
iii. Student Union Building	3 elevators
iv. Smiley Arts Building	1 elevator
v. Lecture Center	1 elevator
vi. Coykendall Science Building	1 elevator
 - b. No building shall be without an operating elevator at any time when the campus is in session and the respective buildings are open and occupied.
 - c. The elevator upgrades at Smiley Arts Building, Lecture Center and Coykendall Science Building to occur between May 27th, 2024 to August 23rd, 2024. Refer to the academic calendar noted below.
 - d. All buildings are located within the central campus area which will be active with pedestrians, campus vehicles and other construction projects. Fire access lanes must be unrestricted at all times. A staging and storage plan shall be developed and reviewed by the Campus/SUCF/Consultant for each phase of the work.

The Contractor shall be permitted to start field-work subject to the following;

2. In accordance with Section 2.06 of the Agreement, provide onsite the approved dedicated superintendent who has documented experience on three (3) other projects of similar size and scope where he/she effectively lead and managed crews of the size required to perform the

similar work, planned and implemented a similar sequence of work that minimized the impact to campus/building occupants and deployed and managed the workers required to meet the schedule and the specified level of quality for the completed similar work.

3. Demonstrate that all materials required for the complete performance of the proposed field work are on site, inspected, inventoried and deemed readily available for installation of the work.
4. Provide a sequenced, summary list of field activities related to the transfer of the work areas from the campus to the contractor and related mobilization activities. Include those related to posting and notification to campus, erection of temporary signage for code, directional and informational purposes, and other activities required to facilitate the start up of construction activities. Review the list with the campus and the consultant and modify it to incorporate their comments. Follow the sequence of the approved list during field activities.
5. Submit the Safety Procedures Manual required in Paragraph 01 35 13, "Safety and Protective Facilities," below.
 - a. In order to assist the Contractor in the planning and scheduling of construction activities, the documents have diagrams and narratives depicting a preferred sequence for closing off portions of the buildings and campus and for performing and completing portions of the work. The preferred sequence provides for continuity of campus operations and describes certain work necessary for continuity of campus operations. Provide all sequencing and minor phasing that may not be specifically indicated on the phasing documents but is reasonably inferable from the way the campus operates. The Contractor may propose alternative construction phasing, provided such phasing satisfies the requirement of continuous campus operation.
 - b. The Contractor shall schedule the Work for expeditious completion in accordance with Section 3.01(2) of the Agreement. The proposed schedule must be established in cooperation with the Campus and account for Campus calendar restrictions listed in this section that affect the Contractor's access to the work areas and construction activities. At each periodic meeting, the Time Progress Schedule required by Section 3.02 of the Agreement shall be reviewed for compliance with phasing requirements. Revise and update the Time Progress Schedule to properly depict the work required to maintain continuity of campus operations.

First phases of work shall include appropriate time in the schedule for: (1) understanding Campus operations, training crews, acclimating trades and Campus to sequence and apportionment of activities; (2) additional meetings (up to twice a week during the first twelve weeks after the Notice to Proceed) with the Owner, consultant and the Contractor's principals, project manager and those of its significant subcontractors; (3) re-sequencing activities to recover from start up delays in the progressive operation of interrelated work and (4) other activities commonly associated with the start up of field work.
 - c. Academic Calendar: The Contractor is advised that the Campus intends to maintain a full institutional program throughout the Project duration. The Campus will make continuous use of adjacent spaces, buildings and site, except where work is scheduled or specified to occur. All Contract work must be scheduled and performed without causing unscheduled

interruption of the normal institutional activities and processes. The Contractor shall coordinate their work with the following Campus Calendar, and No Utility shutdowns will be permitted during Registration, Study Periods, Exam Periods, or Commencement.

Insert web link to campus academic calendar here.

<https://www3.newpaltz.edu/calendars/>

- d. The work site will be available to begin construction immediately upon Notice to Proceed. Unless otherwise indicated, normal working hours on the campus are between 7:00 AM and 4:00 PM.
- e. On the Date of Substantial Completion in the Proposal, access to the work area for any uncompleted work and for punch list items shall be restricted to after 5:00 PM and prior to 7:00 AM and comply with the following:
 - 1. Methods of performing work shall not hinder or disrupt the Campus' occupancy, reduce Campus provided levels of cleanliness and ambient environmental conditions and affect building systems, services, and utilities serving the building unless, upon completion of each shift's work that is performed outside of normal Campus work hours, the Contractor provides cleaning to return the work areas to a similar level of cleanliness as normally provided by the Campus, returns spaces to their normal ambient environmental conditions and restores building systems, services, and utilities serving the occupancy.
 - 2. No material or equipment shall remain inside the building unless in the active use and control of Contractor personnel.
 - 3. The Contractor shall provide all utility relocations and re-routings necessary to maintain the existing utilities at their level of service being used by the occupants, including limiting their shutdowns for tie-ins and cutovers to those periods specified. All new work shall be in place, tested and accepted prior to performing a shutdown for the required tie in.
- f. Time Delay Allowance: In addition to the requirements of Article III of the Agreement, the base bid contract duration to perform the work specified in the proposal shall include not less than five (5) consecutive and/or non-consecutive eight hour working days in the Time Progress Schedule for delays that are of no fault of the Contractor or any of its subcontractors or suppliers, or caused by events or conditions that could not be reasonably anticipated. Provide notice of delay per Section 3.04 and request use of this time allowance. When approved by Consultant, the time allowance is expended for each work day that the contractor is unable to work and all delay time used is tracked in the Time Progress Schedule. After this base bid time allowance for delay is expended, comply with the requirements of Article III for any additional delays.

01 32 13 10 Scheduling of Work - Contractor's Coordination with locality

- 1. "Not applicable."

01 32 13 20 Scheduling of Work - Contractor's Coordination with the with utility companies

1. The Contractor shall coordinate and cooperate with utility companies, including scheduling the work of other trades to sequence with the work schedule required by the utility companies.
2. The Contractor shall pay all costs associated with the work of the utility companies for extension and connection to their services on both a temporary and permanent basis. For gas services, standard fees and special fees for the specified pressure are required.
3. The Contractor shall accept the form of contract proposed by the utility companies without exception.
4. The Contractor shall provide any riders, amendments, etc. to its own insurance policies that it deems proper to cover the work of utility companies in accordance with Article V of the agreement or to cover other liabilities that may arise from the contractor's relationship with the utility companies on this project.
5. The Contractor shall provide prompt payments to utility companies as required to advance their work, but accept payment for such work from the Fund in accordance with Article IV of the Agreement.
6. This project includes work to be performed by the following utility companies:

NAME	Contact	Telephone number
(insert utility names here)		

01 32 16 Project Schedule

Project Schedule shall include the following:

- a. The Contractor shall prepare a construction progress schedule which shall consist of a Critical Path Method (CPM) schedule as described below and shall incorporate the Schedule Summary Activities and Milestone Dates as indicated in item j below.
- b. The development and updating of the Construction Progress Schedule shall be by the critical path method (CPM) and shall be computer generated using the latest version of PRIMAVERA Systems scheduling software. Other computer software will not be accepted.
- c. The CPM Schedule shall consist of time-scaled logic diagrams and other data specified herein. The diagrams shall show activities of the project in detail and in summary format. Diagrams shall also show the order and interdependence of activities and the sequence in which the Work is to be accomplished, incorporating the schedule summary activities and milestone dates indicated in item j below, and as further planned by the contractor. All logical relationships shall be finish to start, with the following exceptions: (1) Activities at the start of the project may be start to start (2) At a milestone or project finish, activities may be finish to finish. Lag factor use will be limited, and if used, identified as a functional activity. The use of imposed start dates will also be limited. The retained logic mode shall be used for calculations.
- d. In addition to construction activities the CPM schedule shall include, but not be limited to, the following:

- 1) Testing activities / required inspections (Show Contractor provided tests that are specified in Divisions 1 through 48, inclusive, and Consultant performed tests, where applicable).
 - 2) Subcontractor selection and approvals (major subcontractors submitted within 48 hours of bid).
 - 3) Shop drawing preparation and approval activities. Sequence submissions to provide sufficient time for the coordination of shop drawings of one trade that impact other trades, as required by Section 2.19 of the Agreement. Also include mock ups and pre-installation meetings where specified. Where practical, submittals shall be broken into smaller review packages of approximately 50 to 75 drawings. Each package will have its own activities in the schedule for submission, review and procurement. Package and schedule submission of shop drawings in sequence with the procurement schedule to spread submittal review periods out over the greatest time period practical.
 - 4) Procurement schedule (order dates, fabrication, deliveries, and long lead items – specifically list any significant product whose source is outside of the United States).
 - 5) Special Campus restrictions, i.e., Campus approvals for work site access, shutdowns and other impacts (noise/ testing & examination/ site and building access etc.).
 - 6) Requirements for any on site shutdowns that may impact work.
 - 7) Status of LEED credits
 - 8) Training and/or instruction of campus personnel.
 - 9) Commissioning of major building systems including pre-functional testing, startup, functional testing, operational scenario testing and retesting as required.
 - 10) Campus furnished products installed by the Contractor.
 - 11) Periodic meetings on construction fire safety with the Campus Fire Prevention Program Superintendent and other interested parties.
 - 12) Meetings on site with Consultant to review mock ups and detailing. Include time for the Consultant to review and consider the work of mock ups, which may be up to two weeks before mockups can be approved and installation of the material or systems may begin.
- e. The detail of information shall be such that activity duration, in general, will range from 3 to 30 days. Activity description and duration shall be shown for each activity on the diagrams. The critical path shall be determined and shall be clearly indicated on the diagrams.
- f. A Summary Schedule of the entire work of the Contract shall be provided along with the initial submittal and each update using PRIMAVERA software. The contractor shall code the activities on the initial detailed schedule to summarize the same so that the resulting Summary Schedule Activities match those listed in item j below.
- g. A CPM Report shall be provided along with the initial submittal and each update and shall include a tabulation of each activity shown on the CPM schedule. The following information shall be furnished as a minimum for each activity: Activity I.D., Description, Duration, Early/Late Start, Early/Late Finish, and Total Float. Reports and updating will indicate actual start and completion for completed activities and actual start and percentage complete and remaining duration for activities in progress.
- h. Initial phases of work shall include time in the schedule for training crews, acclimating trades to the sequence and apportionment of activities, additional meetings with the owner, Consultant, Contractor and the significant subcontractors, and re-sequencing activities to recover from start-up delays typically caused by normal activities associated with the start up of field work.

i. Submission and review of the schedule shall be as follows:

- 1) A preliminary CPM schedule, consisting of time-scaled logic diagrams and other data specified herein, defining the contractor's planned operations during the first 120 days, shall be submitted after receipt of the Notice of Award but before receipt of the Notice to Proceed. The CPM schedule shall be sufficiently detailed to show clearly, in sequence, all salient features of the work of each trade including: the anticipated time of commencement and completion of such work and the interrelationship between such work, submission of Shop Drawings and Samples for approval, approval of Shop Drawings and Samples, placing of orders of materials, fabrication and delivery of materials, installation and testing of materials, contiguous or related work under other contracts, and other items pertinent to the work that may occur in the first 120 days. The Notice to Proceed may be withheld until this schedule is received and is deemed responsive to the project requirements.
- 2) The complete CPM Schedule, including the time-scaled logic diagrams, narrative, summary schedule, manpower schedule if applicable and activity reports shall be submitted within 60 calendar days after receipt of the Notice to Proceed but before processing second progress payment application. The Fund's Consultant will review The Schedule to ascertain that it meets the overall project objectives and that it contains all necessary milestone dates or other required elements. At that time the schedule will become the Schedule of Record (SOR) and the established "Base-Line" for project monitoring purposes. In addition to the requirements in 4.10 (1) of the Agreement, the second progress payment application will not be acted on until this schedule is received and is deemed responsive to the project requirements.
- 3) This review of the Schedule of Record is for the sole purpose of determining whether it meets the overall project objectives and milestone dates and to whether all related phasing, restrictions, Campus supplied fixturing/equipment, or any other potential impact(s), have been addressed. Agreement on the "SOR" does not constitute approval of the Contractor's means, methods, sequencing, or duration of activities. THIS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- 4) Float is defined as the amount of time between the early start date and the late start date or the early finish date and the late finish of any of the activities in the CPM Schedule. Float is not time for the exclusive use or benefit of either the Fund or the Contractor.
- 5) Initial submittal, complete revisions and updates shall be submitted in four (4) copies (minimum 18" X 24"), one PDF and in native electronic format with all input data formatted for PRIMAVERA software.
- 6) The Schedule of Record shall be revised by the Contractor until it is satisfactory to the Fund and the Consultant, and the same shall be periodically revised thereafter and submitted by the Contractor to the Fund and the Consultant for acceptance at such time or times the Fund or the Consultant may request.
- 7) Whether or not the Consultant and the Fund have accepted the Project Schedule, the Schedule of Record shall be updated monthly: 30 days and shall be submitted along with

the Contractor's application for payment. For the two intervening month periods the Contractor may "mark for progress" the SOR and submit with the applications for payment.

- 8) If the actual progress of the work is behind the timeline of the Schedule of Record by more than 15 working days, then the Contractor shall provide a new and completely revised schedule that shall be called the recovery schedule. The recovery schedule shall be provided within 30 calendar days after the Consultant's request and its purpose is to change the sequencing of activities, duration of activities, and /or other factors as required to return the actual projected schedule completion date to that of the SOR. The recovery schedule is in addition to the regular updates. If the actual progress of the work is behind the timeline of the submitted recovery schedule by more than 15 working days, then the Contractor shall provide a new and completely revised recovery schedule.
- 9) Provide a historic schedule as requested by the Fund that shows the actual activity descriptions and durations that occurred during the work for each activity on the diagrams. The actual critical path shall be documented and shall be clearly indicated on the historic diagrams.

j. Milestone Start and Finish Dates & Summary Activities

- 1) Notice to Proceed (Milestone Date)
- 2) Mobilization
- 3) Environmental & Abatement
- 4) M-E-P-S (Mechanical, Electrical, Plumbing, Sprinkler & Fire Systems) Rough-In & Major Equipment Installation
- 5) M-E-P-S Systems-Fixtures/Trim/Accessories
- 6) Interior General Construction
- 7) Equipment & Specialties
- 8) Testing, Training & Commissioning
- 9) Life Safety Systems Tested & Accepted (Milestone Date)
- 10) Substantial Completion/ C of O (Milestone Date)
- 11) Start of Guarantee Period
- 12) SUCF Contract Completion Date (if different from above)
- 13) Final Completion - All punch list/outstanding items satisfied (Milestone Date)
- 14) Field Order Work (multiple periods of work proportional to the dollar value of the field order allowance starting at the Notice to Proceed and ending at Substantial Completion.)
- 15) Other milestones as may be required by the Fund, the Consultant or the Contractors.

01 32 29 Notice of Non-Compliance

1. In the event the Consultant views the work or some portion thereof and finds that it has not been performed in accordance with the requirements of the contract documents, a Notice of Non-Compliance will be issued to the Contractor for action. Payment shall not be made for any portion of the work for which a Non-Compliance Notice has been issued and the work not corrected to the satisfaction of the Consultant.
2. Upon receipt of a Non-Compliance Notice the Contractor shall provide a written response to the Notice within ten (10) working days after receipt of the Notice. The Contractor's response shall detail either:

- a) Why they believe that the work was performed in accordance with the contract documents, or,
- b) What corrective action they intend to take, at their sole expense, to correct the non-conforming work.

Refer to Article II Section 2.02 for Contractors contention to the decision.

01 32 33 Project Photographs

1. Prior to beginning work, the contractor shall schedule with the Consultant, the Campus, and the Fund sufficient periods of time in which the Contractor shall photographically record existing conditions for all project areas using digital video in MPEG-2 format. Video shall be made at high resolution (1440 x 1152) and shall adequately zoom in on selected elements for clear representation of existing conditions. All video recording shall be done in the presence of the Consultant. Submit the completed video on DVD disk(s) to the Consultant for the record.
2. Photograph any and all damaged or misaligned materials or surfaces which may in any way be misconstrued as having occurred during the implementation of this Contract. Inspect all existing conditions on all paths of travel on the site, adjacent right of ways, and within the building with the Consultant. With clear labeling and convenient indexing, provide written documentation for each video disk referencing both the disk and site locations of recorded images of any and all damage that could be misconstrued as being caused by the Contractor's work and/or access. Repair all damage to existing conditions and along the paths of travel caused by Contractor's Operations.

01 32 33 30 Roof Inspection

When directed by the consultant, prior to work on the existing roofs and again after completion of all work on / near those roof levels, use a firm experienced in roof inspection to scan the roofs with the infrared camera. Spray paint the exact contours of any and all moisture laden areas, if any, on the roof surface. During the survey, use a nuclear moisture detector to verify the accuracy of the infrared camera and to check questionable anomalies. Use the nuclear meter to detect moisture, if any, that is located deep in the roofing system. Provide a computer generated roof plan to scale showing all pertinent roof top equipment and the locations, square footages, and contours of all moisture laden areas, if any. If required, provide corrective repairs and replacement roof systems when directed by the Consultant.

01 33 23 Shop Drawings, Samples, Submittals and other information - (Refer to Section 2.19 of the Agreement)

In addition to the requirements of Section 2.19 of the Agreement and as specified in Divisions 1 through 48, inclusive, comply with the submittal requirements of this section. In addition, where the term "or equal" is specified in Divisions 1 through 48, inclusive, refer to and comply with the requirements of Section 2.20 of the Agreement. Shop Drawings required Divisions 1 through 48, inclusive, may include drawings, diagrams, schedules, product data and other information or materials specially prepared for the work by the Contractor to illustrate some portion of the work. Product data required by Divisions 1 through 48, inclusive, are standard illustrations, schedules, performance charts, instructions, brochures

diagrams and other information amended by the Contractor to illustrate materials or equipment for some portion of the work.

ELECTRONIC SUBMITTALS

1. The Contractor shall set up and maintain a web-based submittal service to log, transmit and track (in real time) all project related documents.
 - a. All project submittals, reviews and re-submittals shall be uploaded in Portable Document Format (PDF) and, if approved by the Consultant, other electronic formats requested by the Contractor. Divide, package and submit all submittals in accordance with Section 01 32 16, Project Schedule.
 - b. The service will also post, track and store RFI's (Request for Information), Supplemental Information, safety procedures manual, emergency contact and action plans, coordination drawings, traffic plans, utility cutover plans, schedule documents, meeting minutes, look-aheads, daily activity reports, project photo documentation, material safety data sheets, waste manifests, diesel emissions, field surveys, utility bills payable to the campus, campus furnished products, testing activities and results, closeout, Operating Instructions and Manuals, planting maintenance, commissioning submittals, SWPPP documents and other non-product related submittals required in the technical specifications. The service will review the contract documents and provide the list of items to be tracked.
 - c. The PDF files shall be created at a minimum resolution of 200 dots per inch utilizing the original document size and full color. Increase the resolution of the scanned file or images being submitted as required to properly present the information. PDFs created by scanning are not acceptable unless all images of text are properly and completely transformed into the electronic characters representing the text.
 - d. The Contractor shall include the full cost of Submittals Website project (all contracts) subscription in their proposal. When approved by the Consultant, all other project related consultants, campus staff, other contractors and vendors will utilize the Submittals Website at no additional charge (unlimited number of users). Web-based training and support shall be available, free of charge from the Submittals Website, for all project participants.
 - e. Acceptable Submittal Website shall document conformance with the following requirements:
 - 1) Independently hosted, web-based system for automated tracking, storage and distribution of contract submittals and other contract related documents. FTP sites, e-mail exchanges, and server-based systems hosted from inside a contractor's office will not be considered.
 - 2) Utilize 256-bit SSL encryption and hosted at SAS70 Type II compliant data centers.
 - 3) Minimum four (4) years' experience of use on comparable commercial construction projects.
 - 4) Website requirements:
 - a) Minimum of four years documented 99.5% website uptime.

- b) Minimum on-line storage required for the duration of this contract (until final closeout).
 - c) Redundant storage of all project information (all contracts) at a minimum of two geographically separate storage sites (not in the same building).
 - f. At completion of project, provide PDF/A copies of all submittals (except physical samples) stored and labeled on four (4) sets of archival optical discs, Universal Serial Bus (USB) flash drives or other electronic data storage devices approved by the Consultant, which include all documents and tracking logs in a navigable format.
2. Paper prints (hard copies) of reviewed submittals:
- a. Provide four (4) Record Paper Copies:
 - 1) Paper copies shall be printed in a size format equal to the original document.
 - 2) Scaled Shop Drawings shall be printed to the scale noted on the drawings.
 - 3) The resolution of the printed copy shall be equal to that of the PDF file that it is being printed from.
 - b. Contractor Copies: The Contractor will be responsible for making copies, for the Contractor's own use and for use by its subcontractors and suppliers.
 - c. Those marked "*REJECTED*" are not in accordance with the Contract Documents and shall be resubmitted.
"*REVISE AND RESUBMIT*" Contractor shall correct and resubmit.
"*MAKE CORRECTIONS NOTED*": The contractor shall comply with corrections and may proceed. Resubmittal is not required.
"*APPROVED - NO EXCEPTIONS TAKEN*": The contractor may proceed.
 - d. All shop drawings and/or submittals used on the construction site must bear the impression of the Consultant's review stamp as well as the Contractor's review stamp, indicating the status of review and the date of review. Contractor Copies: The Contractor will be responsible for making copies, for the Contractor's own use and for use by its subcontractors and suppliers.
 - e. All shop drawings shall reflect actual site conditions and accurate field dimensions. Dimensioned shop drawings shall be submitted for all fabricated items. Incomplete submittals will be rejected without review. Using electronic copies of the contract documents to prepare shop drawings, if permitted in the technical specifications, doesn't relieve the contractor of its responsibility for the accuracy of all information contained on the shop drawings. Verify and coordinate all information necessary to produce accurate and complete shop drawings.
 - f. All shop drawings, submittals and samples shall include:
 - 1) Date and revision dates.
 - 2) Project title and number.
 - 3) Names of:
 - i. Contractor
 - ii. Subcontractor
 - iii. Supplier

iv. Manufacturer

- g. Provide information regarding shop drawings, submittals and samples at the Periodic Meetings.
- h. The project specific submittal log is bound after the General Requirements. Note: The bound submittal log provides a general submittals (shop drawings, samples, mock-ups, O&M manuals, training, extra stock, maintenance during the guarantee period, warranties, test reports and other submittals) in the technical specifications and may not be all inclusive. In case of conflict or omission, the requirements of the technical specifications take precedence over the bound log.
- i. At completion of project, provide PDF/A copies of all submittals (except physical samples) stored and labeled on three (3) sets of archival optical discs, Universal Serial Bus (USB) flash drives or other electronic data storage devices approved by the Consultant that include all documents and tracking logs in a navigable format. PDFs created by scanning are not acceptable unless all images of text are properly and completely transformed into the electronic characters representing the text.

01 33 23 20 Coordination Drawings

“Not Required”

01 35 10 Archeological or Historical Finds

In the event that any relics or items with archeological or historical value or other valuable materials are discovered on the site or in a building by the Contractor or any subcontractor, the Contractor shall immediately notify Owner and appropriate authorities in accordance with applicable Laws and await the decision of Owner before proceeding with any further Work that might harm or destroy such relics. Neither Contractor nor any subcontractor shall have any property rights to such relics.

01 35 13 Conducting Work

1. All work is to be conducted in such a manner as to cause a minimum degree of interference with the Campus' operation and academic schedule. Prior to any excavation, demolition or other work that may impact campus and/or building utilities, systems and infrastructure by causing alarm(s), failure(s) or interfering with the ability of utilities, systems and infrastructure to serve the campus, provide a written emergency action plan that clearly describes the steps required to safely shut down utilities, systems and infrastructure that are within the work area and those outside the work area and within approximately 25 feet of the work area limits, as approved by the Consultant. The plan shall comply with the Fire Code of New York State. The emergency action plan shall identify the shut off point(s) for each utility, system and infrastructure and secondary shut off point(s) if the primary points fail or inaccessible. To identify shut off points, trace each utility, system and infrastructure in the presence of the campus representative from the work area to the shut off points. The emergency action plan shall describe the shutdown procedure, identity tools required for shutdown, sequence of activities required for proper shutdown, the

name of the person(s) or trade(s) deemed competent to perform each activity in the shutdown sequence and names and telephone numbers of the campus staff required to provide access to shut off points, assist in the shut off or perform portions of the shutdown activities. Submit the emergency action plan for review and approval at least two weeks prior to field work in the work area. Field work shall not begin until the emergency action plan is approved.

2. By the end of each workday, the Contractor shall submit daily manpower counts and a brief description/location of the day's activities. *PLEASE NOTE: FOREMAN MAY HAVE TO STAY PAST NORMAL QUITTING TIME TO PROPERLY COMPLETE THIS PAPERWORK.* Manpower shall be broken down by job classification (foreman, journeyman or apprentice), and also by number of minority and women workers, including information for all subcontractors, suppliers or other workers. The report shall also note all deliveries, equipment on site, whether inspections passed or failed, visitors and inspections.
3. Proper attire is required on-site. Full-length pants, shirts with sleeves and hard sole work boots are required. No shorts, tank tops or sneakers are allowed. Workers not properly dressed will be sent home.
4. Safe and direct ADA accessible entrance to and exiting from the existing buildings shall be maintained at all times during regular hours while construction is in progress. Means of egress for construction workers shall comply with the Fire Code of New York State. Prior to performing any removals or construction that impairs free egress from existing building exits to refuge areas remote from the buildings, complete the installation of all temporary fencing, barricades and walkways. Install temporary egress, stairs, ramps and paths around work areas that comply with the Protection of Pedestrians section of the Safeguards During Construction chapter the New York State Uniform Fire Prevention and Building Code.
5. Unless otherwise permitted by the Consultant and the Fund, the removal and/or demolition of given work items shall not occur until the Contractor has all the required replacement materials on-site.
6. Code of Conduct: The Contractor and its employees shall comply with College regulations governing conduct, background checks, access to the premises, and operation of equipment. In addition:
 - a. All employees of the Contractor and every subcontractor must comply with all site access control and security procedures prescribed by the Campus which may include, but are not limited to, the wearing of identification badges, ingress and egress through controlled entry and exit points, and use of card readers or other electronic identity verification devices. In the event said identification badge has not been issued by the Contractor, all employees of the Contractor and every subcontractor must produce a valid form of government-issued photo identification promptly upon request of the Campus. Failure to display such identification or to display or produce such identification in the manner as prescribed by the Campus may result in the employee's non-admittance to or immediate removal from the site
 - b. The Contractor and his/her workers, employees, subcontractors and their workers, etc., will not fraternize with any building or campus occupants. This includes, but is not limited to, students, faculty, and employees of the State other than those designated contacts for this Project, visitors and guests.
 - c. At no time will it be appropriate to say, write, or gesture anything derogatory to or about any individual(s). Harassment, verbal or otherwise, of any individuals will not be tolerated.

- d. Alcoholic beverages or illegal drugs are not permitted on this Project. Smoking may be permitted where it is permitted by campus regulations and controlled in accordance with the Fire Code of New York State, except that smoking shall be prohibited throughout demolition work areas and where recommended by NFPA 241 Annex A, Explanatory Material.
 - e. Radio playing is disruptive to building occupants and is not permitted.
 - f. If worker(s) fail to properly adhere to the Code of Conduct or fail to follow safety or other regulations, the Contractor will be directed to permanently remove the worker(s) from the site and replace the worker(s) at no additional cost to the Project.
7. The building shall not be left "open" overnight or during any period of inclement weather. Temporary weather tight closures shall be provided for by the Contractor to protect the structure and its contents.
- a. Provide an emergency plan to secure the work site during severe weather.
 - b. As part of the base bid, for ambient exterior weather conditions, include all reasonable materials, labor and equipment, which may be in addition to those required for the work, to implement the emergency plan for conditions up to the 95th percentile recorded seasonal conditions recorded at the nearest National Weather Service site.
 - i. For conditions meeting or exceeding the 95th percentile, the additional reasonable labor, material and equipment required to implement the emergency plan may be paid for by Field/Change Order when the Consultant determines that such additional labor, material and equipment could not have been reasonably anticipated in the base bid emergency plan.
 - c. As part of the base bid and Article V of the Agreement, for damages caused by ambient exterior weather conditions, provide all reasonable materials, labor and equipment, which may be in addition to those required for the work and/or required to perform stabilization, removals and corrective work caused by severe weather.
 - i. For conditions meeting or exceeding the 95th percentile, the additional time required for corrective work may be paid for by Field/Change Order when the Consultant determines that such time could not have been reasonably anticipated in the base bid emergency plan.
 - d. The plan shall describe:
 - i. how weather conditions will be monitored,
 - ii. which forecast weather conditions require emergency preparations,
 - iii. what emergency preparations are required during the anticipated conditions of the job site during the time of the work, including removal of precipitation, securing materials, chemicals, temporary facilities work in place and other steps that could be reasonable anticipated,
 - iv. when such emergency preparations will be implemented,
 - v. who will implement the preparations,
 - vi. who will check the completed preparations to confirm they meet the intent of the plan,
 - vii. who will communicate the plans to local emergency responders,
 - viii. how the site will be monitored during severe weather,
 - ix. who will be on standby to return to the site when permitted by local emergency responders,

- x. how the damage, if any, will be assessed.
- e. The emergency plan shall be available for review by the Consultant within four (4) hours or less notice during non-working hours and within thirty (30) minutes during working hours.

01 35 13 10 Salvage of Materials

Remove and legally dispose of all debris and other materials resulting from the alterations to State University property. The following items shall remain the property of the Campus and shall be stored at the site as directed by the Consultant:

01 35 23 Safety and Protective Facilities

1. The Contractor shall provide the necessary safeguards to prevent accidents, to avoid all necessary hazards and protect the public, the Campus staff, students, visitors, the work, and property at all times, including Saturdays, Sundays, holidays and other times when no work is being done. The Contractor's Safety Procedures Manual shall be certified by a Certified Safety Professional from the Board of Certified Safety Professionals (www.bcsp.org).
 - a. Prior to beginning any work on site, submit an OSHA compliant site specific Safety Procedures Manual that identifies all site-specific safety issues related to this work and details how each will be addressed. In accordance with OSHA, hold weekly "Tool Box" meetings with jobsite personnel to discuss safety and fire prevention topics as required by NFPA 241 and as recommended in its Annex A, Explanatory Material.
 - b. Provide the appropriate "competent" person(s) (as defined by OSHA) on site during the performance of work.
2. The Contractor shall erect, maintain and remove appropriate barriers or other devices, including mechanical ventilation systems, as required by the conditions of the work for the protection of users of the project area, the protection of the work being done, or the containment of dust and debris. All such barriers or devices shall be provided in conformance with all applicable codes, laws and regulations, including OSHA and National Fire Prevention Association (NFPA) 241, for safeguarding of structures during construction. Provide a copy of NFPA 241 for use on site during the work. Barriers shall be made from noncombustible and/or fire retardant materials. As appropriate to the risk and when requested, provide periodic inspections of the safety and protective facilities by competent individuals. Promptly correct any deficiencies observed.
 - a. Prior performing any removals or construction that impairs free egress from existing building exits to areas of refuge remote from the buildings, complete the installation of all temporary fencing, barricades and walkways. Install temporary egress, stairs, ramps and paths around work areas that comply with the Existing Building Code of NYS, Chapter 15 - Construction Safeguards.

- b. Sequence the construction work to minimize the relocation of the above barriers and walkways. Install, relocate and modify the construction safeguards, barriers and covered walkways as required to perform the work in a manner that limits the temporary closure of any egress path to the least amount of time possible. If any egress path requires closure that is not shown on the drawings, that closure may not be able to occur during normal business hours of the buildings. Where permitted by the Code and if approved by the Campus and the Consultant, portions of interior corridors, aisles and passageways may be closed for limited time periods if such portions are under continuous supervision of the Contractor and the Contractor has a reasonable plan to divert and direct exiting occupants during an emergency.
- c. When existing stairs are not available for the Contractor's use, provide a stair when construction work areas are four stories above or below the exit to staging areas on the adjacent grade. The existing/permanent stairs of the Project may be used by the Contractor if the stairs are in essentially new/repared condition prior to the Fund's acceptance of the structure. Where the existing/permanent stairs are not available for the Contractor's use, provide a noncombustible temporary stair meeting the following requirements:
 - 1) Clear width of stair and landings shall be 36" with 6'-8" clear headroom.
 - 2) Riser height shall not exceed 7" and tread width shall not be less than 11".
 - 3) Handrails shall be on both sides between 34" and 38" above tread/landing, be continuously graspable and have a 1 1/4" circular cross section.
 - 4) Each level will have clear signage identifying the level, stair and exit path.
- d. Prior to starting demolition, to maintain occupied spaces with their current services and utilities, trace all services and utilities, identify their respective areas and zones of service, both within the work area and outside to work area. Two weeks prior to start of demolition, submit a written plan for each service and utility describing how such services and utilities will be temporarily maintained, shutdown, disconnected and cut, and/or permanently reconnected. Field tracing, testing and identification of services and utilities that requires their temporary shutdown will be done after hours or on weekends.
 - 1) The plan should clearly identify any impairment of fire protection system(s), exit signs, exit lighting and/or other code required life safety systems. Add dates and durations of impairments to the Project Schedule.
 - 2) The Project Schedule should allow for the presence of the Campus Fire Prevention Program Superintendent at the time fire protection system(s), exit signs, exit lighting and/or other code required life safety systems are shut off and at the time such systems are restored to partial/full service.
- e. When moving any items (materials, equipment, supplies, tools or other items) through exits, exit access spaces and site areas shared with the campus during occupied hours, provide radio equipped flagger(s) whose sole responsibilities are: (1) to direct pedestrian and vehicular traffic as required to permit the safe transport of the items from the staging area to the work area; (2) to inspect the paths traversed to confirm that they are clean, safe and ready for the campus to resume using; and (3) to confirm that gates, doors,

fences, barricades and other temporary controls intended to separate the public from the area(s) controlled by the Contractor are properly restored.

- f. Other than materials required for a work shift, storage of materials shall not be permitted in building spaces shared with the campus. Do not leave any materials, equipment, partially installed work, etc. in a manner that prevents full operational access by the campus to the spaces outside the areas controlled exclusively by the Contractor. Only the material which can be used in one shift shall be moved into the spaces shared with the campus. All other material shall be stored in the areas exclusively controlled by the Contractor. During the work shift, materials, tool boxes, etc. may be dispersed throughout the work locations shared with the campus, as required to perform the work, but shall be continuously attended to, neatly organized and located in a manner that does not create tripping hazards and/or reduce the clear travel path of exits and exit access spaces. All tools and excess material, if any, dispersed through the work locations shared with the campus shall be collected prior to the end of each shift and moved to the approved staging area.
- g. The contractor shall leave the interior building access path to and from the work areas vacuum clean after the completion of each day's work.

3. Fire safety during construction:

- a. If required by the nature of the work and campus regulations, the Contractor shall obtain from the Campus and pay all costs associated with "Confined Space Permits" or "Hot Permits" to execute the work of its contract. Perform hot work in accordance with the Fire Code of New York State and the Hot Work Program approved for the work. Prior to, during and after performing hot work, inspect the hot work area for compliance with the requirements of the permitted Hot Work Program.

See applicable permits and conditions bound elsewhere in this Manual (01 00 00 General Requirement Reference Documents).

- b. Take all reasonable precautions against fire in accordance with good fire engineering practice. Provide all temporary plans, maintenance, programs, equipment, labor and material required for compliance with the applicable provisions of the Fire Safety During Construction and Demolition chapter of the Fire Code of New York State (FCNYS) in the New York State Uniform Fire Prevention and Building Code.
- c. For areas and spaces under their control, the Contractor shall comply with applicable provisions of the Fire Safety During Construction and Demolition chapter of the Fire Code of New York State (FCNYS) in the New York State Uniform Fire Prevention and Building Code. The Campus Fire Prevention Program Superintendent will develop a project specific Fire Prevention Program required by Section 3308 of the FCNYS. The Contractor's superintendent shall be responsible for reviewing the Fire Prevention Program for coordination with the Contractor's work plan, adhering to the provisions of the Fire Prevention Program and implementing the minimum safeguards for construction, alteration, and demolition operations that provide reasonable safety to life and property from fire during the Contractor's operations. The Contractor's superintendent shall also

cooperate with the Campus Fire Prevention Program Superintendent, respond to questions raised concerning fire safety and take prompt action to correct conditions which do not meet the applicable provisions of the Fire Safety During Construction and Demolition chapter of the Fire Code of New York State (FCNYS) in the New York State Uniform Fire Prevention and Building Code and the project specific Fire Prevention Program.

- d. Use noncombustible material (metal or fire retardant material) for scaffold, trash chutes, forms, shoring, bracing, temporary stairs, ramps, platforms and boxes when such items are required during the work.
- e. When permanent sprinkler and/or standpipe systems are installed as part of the work, sequence the installation of these systems in a manner that closely follows the construction work, allowing the systems to be partially or fully operational within construction work areas, as required by NFPA 241 and as recommended in its Annex A, Explanatory Material. When permanent/existing sprinkler and/or standpipe systems are modified as part of the work, sequence the modifications of these systems in a manner that minimizes the duration of time for impairment of the systems.
- f. The "Construction Fire Safety Weekly Review" form and other documents that may be developed by the Campus Fire Prevention Program Superintendent may be used during the inspection program required by NFPA 241 7.2.4.4. A copy of the Construction Fire Safety Weekly Review is bound elsewhere in this Manual.
- g. Be responsible for dust control and cleanup. Provide dust curtains, ventilation and negative air machines when grinding or cutting inside the building. Use enclosed chutes whenever materials are dropped more than 10 (ten) feet.
- h. All extension cords, cables and hoses shall be maintained at least 6 feet 6 inches above the working floor. Where this is impossible, these items shall be inspected daily and repaired immediately or tagged and removed from use until repaired.
- i. Store flammable and combustible liquids and flammable gases used during the work in compliance with the Fire Code of New York State.

01 35 23 10 Material Safety Data Sheet

The contractor shall submit SDS (Safety Data Sheet) for all chemicals, solvents, and materials specified or proposed to be used on this project.

01 35 29 10 COVID-19 Contractor Requirements and Guidance for Construction Jobsites

The Contractor will comply with the NYS DOH Interim COVID-19 Guidance for Construction Projects, "Guidance", as may be amended or superseded, which is made a part of the contract work for this Project. All costs and time associated with compliance with the current Guidance are included in the Contract consideration in Article IV of the Agreement. The current Guidance is available at the following website:

01 35 43 Environmental Procedures

Employ measures to prevent creation of air pollution and odors.

- a. On interior work and work adjacent to occupied areas, all passageways and vent systems will be sealed to prevent dust, air pollution, and odors from traveling into occupied areas. Take measures to ensure proper separation in accordance with Section 01 35 23. Ensure that the integrity of the separation is maintained throughout the period of the work. In the event any trade must remove a barrier in whole or in part, it is their responsibility that the barrier is reconstructed at the end of each work period.
- b. Perform exterior work adjacent to air intakes, doors, windows and/or other passageways that may convey odors but cannot be sealed without impacting campus operations during weekends, second or third shift or other off hour periods that mitigates the impact to campus operations. Seal openings with fire-retardant poly tenting or equivalent. Allow sufficient time to install temporary barriers at the beginning of each off-hour period and remove barriers at the end of each off hour period.
- c. If the omission of construction related odors is found to be offensive by building staff, work will stop and efforts to effectively exhaust the odors will begin immediately. Continuance of the odor causing work will be permitted during non-occupied times.
- d. No gasoline/diesel powered engines are permitted inside a Campus building.

01 35 73 Delegated Design

At the request of the Consultant and in compliance with the Rules of the New York State Board of Regents, the Fund has allowed the Consultant to delegate to the Contractor certain portions of the design of the work. These portions are listed below in the Schedule of Delegated Design. For portions of the work where design has been delegated, the Consultant has provided, elsewhere in this Project Manual, the complete parameters which the design must satisfy and other requirements. The Contractor shall assign responsibility for the design of the delegated portions of the work to person(s) who are New York licensee(s), or otherwise authorized, who shall sign and certify his/her design work and who are approved by the Consultant.

Schedule of Delegated Design in the Technical Specifications:

Project No. 081058

Project Title: SUNY New Paltz Elevator Modernization

Section Number	Section Name	Description of Delegated Design (See Section for complete details)
	None	

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Note: The above list provides a general summary of work delegated in the technical specifications and may not be all inclusive. In case of conflict or omission, the requirements of the technical specifications take precedence over the above list.

01 41 13 Code Compliance and Testing (In addition to Section 2.10 of the Agreement)

1. The Fund, if the same is required by law, will issue a Building Permit for this Project. The project is not subject to any local building code or permit requirements, except for work that the Contractor is to perform on property located outside of the boundaries of the campuses of the State University of New York or on systems or equipment within the boundaries that are owned or controlled by others such as utility companies.
2. Special Inspections: This project may contain work requiring Special Inspections in accordance with the Building Code of New York. The Fund and the Consultant shall exercise control to verify that the construction conforms to the contract documents. In addition to the requirements of Section 2.17 of the Agreement, cooperate with and provide safe access for inspection and testing agencies, as reasonable to allow inspections and tests to be performed. This will require the Contractor to provide and attend to / operate scaffolding, ladders, or lifts. This project may also contain work requiring the construction of a main wind- or seismic-force-resisting system, designated seismic system or a wind- or seismic-resisting components and the Contractor shall have provisions for quality control.
 - a. See the Statement of Special Inspections bound after this Section for the project specific Special Inspections program.
3. All work involving installation and modification to fire alarm systems shall be performed by individuals or firms currently licensed by the NYS Department of State, Division of Licensing Services. The contractor shall provide copies of the individual's or firm's current license and identification cards for all unlicensed employees performing work for the licensed individual or firm for this project. The Contractor shall post a copy of the license at a location approved by the Consultant.
4. Employ a Certified Master Electrical Inspector that has been certified by the International Association of Electrical Inspectors (IAEI) to provide inspection of electrical systems installed and modified in this project. Systems inspected include all electrical service, wiring and devices, appliances and accessories. Provide four copies of the final certificate(s) and other special services required to complete the inspection in the phasing specified in paragraph 01 32 13 of this section. Unless otherwise approved by the Consultant, follow the recommendations in the most current edition of the IAEI Electrical Inspection Manual with Checklists. The Checklists for this project include the following:
 - a. General Safety Checklist,
 - b. General Requirements Inspections,
 - c. Wiring Methods and Devices,
 - d. Services, Feeders, and Branch Circuits,
 - e. Grounding and Bonding,

5. In addition to the requirements of Section 2.17 of the Agreement, before performing system tests, partial system tests or scheduling inspections for fire alarm, fire suppression, electrical, mechanical, plumbing, elevator, site infrastructure and other work that must be completed for a Temporary Authorization to Occupy and/or a Code Compliance Certificate, attend pre-test and inspection meetings for each system with the Consultant.
- a. Provide a list of all Contractor provided tests that are specified in Divisions 1 through 48, inclusive, and list portions of large systems tested separately (see 01 74 00, Clean-Up, for separation criteria), who will perform a test, when it will be done, who witnessed it and when, results (pass/fail), follow up action, comments and other information requested by the Consultant.
 - b. The Consultant will review the scope of inspection of the as built installation, review the completeness of the record drawings per Section 2.24 of the Agreement, review the scope applicable tests and review the applicable forms that will be completed as part of the testing and inspection.
 - c. Immediately after completion of tests, provide original forms with all information filled out plus six copies to the Consultant. Systems required for Substantial Completion will not be considered completed and accepted until all code required forms are completed, submitted and reviewed by Consultant for completeness. For fire protection systems, provide the Statement(s) of Compliance required by Fire Code part 901.2.1.
 - d. Where portions of systems are completed and ready for testing and inspection, those portions will not be considered completed and accepted until all code required forms are completed to the extent applicable to the portion of work completed, submitted and reviewed by Consultant for completeness.
 - e. Where portions of systems are excluded from the portions being tested, provide additional work required to functionally extend systems around the excluded portions and to fully separate the tested portions from the excluded portions.
 - f. Schedule testing that requires safety clearance or impacts campus activities (such as, but not limited to, x-ray testing of welds) and/or testing that requires utility shutdowns for weekends, holidays and/or 2nd or 3rd shift, as appropriate to accommodate the Campus and mitigate disruption to Campus activities.
 - g. Unless otherwise approved by the Fund, all Contractor provided tests that are specified in Divisions 1 through 48, inclusive, must be witnessed and signed off by the Consultant prior to acceptance of the tested work; and, in the Contract Breakdown required by Section 4.08 of the Agreement, the scheduled value of Contractor provided tests shall be 5% of the amount estimated for the work being tested.
 - h. In addition to the above testing, and if mechanical, hot water and/or lighting control systems are included in the work, cooperate with the Consultant to complete the commissioning of mechanical, hot water systems and functional testing of lighting controls. Provide a single competent person as the point of contact for all commissioning required in this contract. As applicable, provide workers, equipment, computer

programming, fuel, power, means of access, operating instructions and manuals (see Section 01 78 23) and other work required to demonstrate installation, operation, functionality, calibration and other performance criteria of such systems.

01 16 Laws

1. "Diesel Emissions Reduction Act of 2006 (the "Act"):

- b. Contractor certifies and warrants that all heavy duty vehicles, as defined in New York State Environmental Conservation Law (ECL) section 19-0323, to be used by the Contractor, its Agents or Subcontractors under this Contract, will comply with the specifications and provisions of ECL section 19-0323 and any regulations promulgated pursuant thereto, which requires the use of Best Available Retrofit Technology ("BART") and Ultra Low Sulfur Fuel ("ULSD"), unless specifically waived by DEC. Qualification for a waiver under this law will be the responsibility of the Contractor.
- c. Annually, in the cycle determined by DEC and the Fund, the Contractor shall complete and submit directly to the Fund, via electronic mail, the Regulated Entity Vehicle Inventory Form and Regulated Entity and Contractors Annual Report forms at the Department of Environmental Conservation ("DEC") website for heavy duty vehicles used in the performance of this Contract for the preceding calendar year. Periodically, as requested by the Fund, the Contractor shall certify and submit the Contractor and SubContractor Certifications form, which states that the Contractor will comply with the provisions of Section 20.23.

Website:	http://www.dec.ny.gov/chemical/4754.html
Inventory Form:	ftp://ftp.dec.state.ny.us/dar/248inventory.xlsx
Annual Report Form	ftp://ftp.dec.state.ny.us/dar/248annrptfrm.xlsx

- 2. Comply with Labor Law Section 220-h; provide workers certified as having successfully completed the OSHA 10-hour construction safety and health course; and comply with the applicable NYS DOL rules and regulations for monitoring and reporting compliance.
- 3. If the project involves work to construct a new cooling tower or modify an existing cooling tower, cooperate with the Fund/campus who must report information on cooling towers into a New York State Department of Health (NYS DOH) statewide electronic system.
 - a. See the water treatment requirements in Division 23.
 - b. The Contractor will comply with all requirements of Title 10 of the New York Codes of Rules and Regulations (10 NYCRR), Part 4, "Protection against Legionella," as currently amended.
 - 1) For existing cooling towers, cooperate with the campus and provide all information required to maintain and update the NYS DOH registration.
 - 2) For new cooling towers, before operating it, the Contractor shall register the cooling tower in the NYS DOH "Cooling Tower Registration And Reporting" system. For the purposes of the NYS DOH system, the Contractor is the "owner" of new cooling towers until maintenance is transferred to the campus.

- i. Create separate accounts for each building.
 - ii. Provide all building details, equipment details, equipment maintenance details, and other information required to complete the registration.
 - iii. In addition to contractor's email address on the account, also list the email addresses of the Consultant and the Fund Coordinator named in Section 1.12 of the Agreement.
 - iv. Print all reports and provide copies to the Consultant, campus and the Fund.
 - v. After completing registration, periodically review and update the account as required based on the progress of the work, the requirements of NYS DOH and/or when requested by the Consultant.
- c. The Contractor must develop and implement a cooling tower maintenance program and plan.
- 1) The plan must comply with the requirements of the water treatment specifications in Division 23 and Title 10 of the New York Codes of Rules and Regulations (10 NYCRR), Part 4, "Protection against Legionella," as currently amended. Submit the plan to the Consultant.
 - 2) The plan must include a schedule for routine sampling for bacteria and for Legionella sampling, as well as conditions under which emergency testing and disinfection are required.
 - 3) Maintain a copy of the plan and all maintenance records on the premises where the cooling tower is located. These documents must be made available upon request by local or state health departments.
 - 4) The base bid includes all cooling tower maintenance from the date of initial startup until the date of the end of the one-year guarantee period for all the specified in accordance with Section 2.25 of the Agreement. If startup, commissioning and training was deferred due to seasonal constraints and was completed after the date of substantial completion of all the work, the maintenance period will still end on the date of the end of the one-year guarantee period.

01 51 13 Temporary Power for Construction Activities

Electrical energy, as/if it exists within the work area, will be available at no cost to the Contractor from existing outlets or panels from locations approved by the Campus. This power may be used for small power tools (not exceeding 1/2 HP), etc., and the Contractor shall not exceed the capacity of the existing circuits being used. The Contractor shall be responsible for providing all necessary connections, cables, etc. and removal of the same at completion of construction with approval from the Fund. The Contractor shall in no way modify the existing circuits at the panel boards to increase capacities of the circuits. If the required power load exceeds the capacities of the available power sources, the Contractor shall be responsible and pay for furnishing and installing all necessary temporary power poles, cables, fused disconnect switches, transformers and meters necessary to provide complete temporary power requirements for the project, and remove the same at completion. Install all temporary wiring and equipment and make all connections in conformity with the National Electrical Code and the Fire Code of New York State. Make all replacements required by temporary use of the permanent wiring system. Provide ground fault protection.

- 2. If, for any reason, the permanent power with necessary cable and connections is not available in time to test out the various mechanical and electrical systems of the Project at the time of its scheduled completion, the Contractor shall maintain and keep in use the temporary power facilities until such permanent power is tied in and fully energized.

01 51 16 Temporary Fire Protection

1. If the existing building is to be partially occupied during the course of the project, all existing exits except those shown for closure, fire walls, fire barriers and fire protection systems shall be continuously maintained in the occupied phases in compliance with the Fire Code of New York State and as required by NFPA 241 and as recommended in its Annex A, Explanatory Material, or other measures must be taken which in the opinion of the Consultant will provide equal safety. Those portions occupied by the campus must be available for their use 24 hours a day, seven days a week during the contract period unless otherwise scheduled in these documents. Comply with all applicable State and Federal codes and regulations. Prior to removal of existing fire walls, fire barriers and fire protection systems, if such removal is part of the work, install equivalent temporary fire walls, fire barriers and fire protection systems. The cost of all labor, fire watches, variances, materials, installations, maintenance and removal of such temporary fire protection systems or modifications to the existing systems are the responsibility of the Contractor. Install permanent fire walls, fire barriers and fire protection systems, if provided as part of the work, as soon as practical and as required by NFPA 241 and as recommended in its Annex A, Explanatory Material.
2. Solid fuel salamanders and heaters shall not be used by the Contractor or any of its subcontractors. For all other salamanders used by the Contractor or any of its subcontractors, attend to their operation with competent persons in each space where in use.
3. All temporary fabric used by the Contractor or any of its subcontractors for curtains, awnings or other uses shall be either non-combustible or flame retarded so that it will not burn or propagate flame.
4. Fire Watch Requirements
 - a. This section applies to the work in this contract, if any, that 1) disables any fire suppression systems, standpipes systems, fire alarm systems, fire detection systems, smoke control systems and/or smoke vents as defined in Chapter 9 of the Fire Code of New State (FCNYS) or 2) involves welding, cutting, grinding, open torches and other hot work as defined in Chapter 26 of the FCNYS and / or 3) involves demolition activities that are hazardous in nature as defined in the applicable provisions of the Fire Safety During Construction and Demolition chapter of the Fire Code of New York State (FCNYS) in the New York State Uniform Fire Prevention and Building Code. In accordance with Section 901.7 of the FCNYS, for structures that have campus occupancy, either provide a fire watch or perform the work during the hours where the building is scheduled by the campus to be closed. If a fire watch is required, provide all labor that is required. The Contractor shall:
 - 1) Contact the New York State Department of State Office of Fire Prevention and Control (OFPC) at Phone: (518) 474-6746, by email: fire@dhses.ny.gov and obtain its currently amended recommendation for fire watch procedures. Review the OFPC recommendations and notify the consultant if there are significant discrepancies with the requirements of this section.
 - 2) Review the fire watch procedures with the Campus Fire Prevention Program Superintendent, campus alarm monitoring staff, and the fire department prior to disabling a fire protection system. Submit the plan for the fire watch for approval by consultant and campus, and schedule pre-system shutdown meeting with consultant, campus and Fund. The plan should describe how false

alarms will be managed and who will be responsible for fire and police departments costs for responding to false alarms.

- 3) Employ, instruct and maintain competent fire watch personnel. Provide the sufficient number of dedicated personnel that are required to patrol all portions of the means of egress system in the facility in the period of time required.
- 4) Notify the campus alarm monitoring staff prior to and at the conclusion of the fire watch.
- 5) Notify the local fire and police departments that the system is "Out of service" and again when the system has been repaired or restored to service.
- 6) Employ competent personnel to fix the fire protection system(s).

b. Fire Watch Duties: Personnel serving as a fire watch have the following duties:

- 1) Conduct periodic patrols of the entire facility as specified below.
- 2) Identify any fire, life or property hazards or the warning signs of fire.
- 3) Notify the campus alarm monitoring staff and the fire department if a fire is discovered by calling 911 with the exact address and type of emergency.
- 4) Notify occupants of the facility of the need to evacuate. If the sirens or public address function of the alarm system are still functional, use them to assist with evacuation of the building.
- 5) Have access to at least one means of direct communication with the fire department. A telephone is acceptable.
- 6) Maintain a written log of fire watch activities
- 7) Have knowledge of the location and use of fire protection equipment, such as fire extinguishers. (Note: The fire watch will not perform fire-fighting duties beyond the scope of the ordinary citizen.)
- 8) Perform no other duties that are not directly part of the fire watch duties.

c. Frequency of Inspections: Fire watch personnel should patrol the entire facility every 30 minutes except in the following situations, where patrols shall be every 15 minutes:

- 1) The facility has people sleeping.
- 2) The facility is an institutional occupancy.
- 3) The facility is an occupied assembly or educational occupancy.

d. Record Keeping: A fire watch log should be maintained at the facility. The log should show the following:

- 1) Address of the facility
- 2) Times that the patrol has completed each tour of the facility
- 3) Name of the person(s) conducting the fire watch.
- 4) Record of communication(s) to the fire department and monitoring company.

01 51 23 Temporary Heating and Cooling

Not Used

01 51 26 Temporary Light

Electrical lighting, as/if it exists within the work area, is available to the contractor at no cost. The minimum temporary lighting level to be maintained at stairs and exit corridors is 1/4 watt per square foot and it will be maintained for 24 hours, 7 days per week; in all other spaces, temporary lighting at the same

level is to be maintained during working hours. If the existing lighting does not meet the aforementioned requirements, the Contractor shall supplement or supply the same, maintain it during the construction period, and remove it at the conclusion of the project, at its cost. Such lighting shall be Underwriter's Label temporary lighting sockets, light bulbs, and intermittent power sockets as approved by the Consultant. Installation shall be in accordance with the National Electric Code and the Fire Code of New York State. The Contractor shall install, maintain and, when necessary as a result of construction progress and at the completion of all work or at such earlier time as the Consultant may approve, remove pigtailed type Underwriter's label lighting sockets, light bulbs and intermittent power sockets. The temporary lighting requirements shall be installed in the structure as soon as the frame is completed and work begins on the enclosing walls. The minimum temporary lighting to be provided is at the rate of one-quarter watt per square foot, is to be maintained in each room and changed as required when interior walls are being erected. The required temporary lighting must be maintained for twenty-four (24) hours a day and seven (7) days a week at all stair levels and in all corridors below ground; in all other spaces temporary lighting is to be maintained during working hours.

01 51 36 Temporary Water for Construction Purposes

Water for construction is available through the campus system without charge to the Contractor from location designated by the College. The Contractor shall obtain the necessary permission, make all connections, as required, furnish and install all pipes, fittings and reduced pressure zone backflow prevention device (tested before use), insulate piping, and remove the same at completion of work. The Contractor must provide for waste water discharge and shall take due care to prevent damage to existing structures or site and the waste of water. All pipes and fittings must be maintained to the satisfaction of the campus at all times. Temporary water system shall comply with the Fire Code of New York State.

01 52 13 Field Office for the Consultant

The Contractor, until all work covered by the contract is accepted by the Fund, shall keep clean and maintain the existing temporary office structure located adjacent to South Classroom Building. The Contractor shall provide the office furniture/supplies as are herein listed:

1. Perform following improvements to existing trailer:
 1. Coat existing trailer roof with aluminized liquid coating.
 2. Replace restroom fan
 3. Re-level the two (2) halves of trailer and repair VCT at joint
2. Provide two (2) Computers similar to 5.31.22 quote attached at end of General Requirements, Computers to be equal/or greater in performance and capability.
3. One (1) drinking water cooler with water and disposable cup supplies for the duration of the project.
4. Provide Supplies as follows:
 1. Five (5) Cases of 8 ½" X 11" Paper
 2. Three (3) Cases of 11"X17" Paper
 3. One (1) box (12+-) each of red, blue, green pens
 4. One (1) box (12+-) mechanical pencils
 5. One (1) box (12+-) each of yellow, orange, pink highlighters
 6. Twenty four (24) 8 ½"X11" writing pads

All of the above items are to become the exclusive property of the Campus at the end of the project. Prior to purchase, submit detailed information for the above items to the Consultant for approval. Prior to

removal of any computer equipment, phone, tablet and/or data storage device, the Contractor shall provide the services of a firm experienced in computer services to visit the field office when directed by the Consultant, permanently erase and delete all data stored on such equipment and demonstrate to the Consultant that all data has been permanently deleted. The Contractor is not responsible for all expendable office supplies except for those specifically noted above.

01 52 19 Temporary Sanitary Facilities

The Contractor will be permitted to use existing toilet and janitor closet facilities as designated by the Campus provided the existing facilities are not misused, defaced, or left in an unsanitary condition. If the Consultant deems that the existing facilities have been subject to misuse or left unsanitary, the Contractor shall be informed and caused to install and maintain (at its own cost) temporary, sanitary facilities at an approved location. The Contractor shall also be held responsible for the cost of cleaning and repair of any damage to said existing facilities and adherence to health and sanitary codes of the State of New York.

01 54 13 Use of Elevator(s) for Construction

When approved by the Consultant, the Contractor shall be permitted to make temporary use of elevators installed during the work (if any) and existing elevator(s) designated by the campus (if any), provided such use does not interfere with the normal activities of the Campus or exceed the capacity of the elevator(s).

1. The use for construction purposes is a new use that was not contemplated during the design of a new elevator and/or the previous acceptance inspection of an existing elevator performed for the campus. In accordance with 8.10.5.10 of ASME A17.1, prior to using an elevator for construction, provide an inspection to confirm that the elevator installation supports the proposed new use.
2. Large and heavy items shall not be placed in elevators, and suitable padding shall be provided whenever a cab is used for construction purposes. Elevator pits shall be kept free of debris and dust by frequent cleaning out.
3. The elevators shall be maintained and restored to original condition satisfactory to the consultant and the Fund at the end of construction activities. If existing elevator(s) are used during construction, provide additional inspections and maintenance required due to construction usage. Prior to use for construction purposes, contact the existing elevator maintenance vendor and arrange for performance of the additional maintenance required due to construction usage.
4. If the elevator is used during construction, provide periodic inspections, as required by in accordance with Table N1, Appendix N, of ASME A17.1. Acceptance and periodic inspections shall be performed by an independent ASME A17.1 Qualified Elevator Inspector employed by a firm specializing in elevator inspection paid for by the Contractor.
5. If the project includes a new elevator(s), it may be used for construction purposes (other than elevator related construction and maintenance) when approved by the Consultant and at the point in completion of the work when the Contractor demonstrates that there is no reasonable temporary hoist option. Submit a written request for approval describing the construction purposes, usage, loads, periodic maintenance, inspections, anticipated wear due to usage, emergency usage plan (if required by the local fire department), and other information that may be requested by the Consultant. Attach to the request a letter from an independent ASME A17.1

Qualified Elevator Inspector (employed by a firm specializing in elevator inspection paid for by the Contractor) recommending the proposed use(s).

- a. Immediately prior to the end of the construction use and maintenance period, clean all portions of the shafts, exterior of hoists, machine rooms and other areas accessible only to elevator technicians.
- b. Do not install the permanent flooring in the elevator until directed by the consultant.
- c. Prior to the end of the construction use and maintenance period, inspect all portions of the elevator systems, shafts and other work required for proper elevator operation in the presence of staff from the firm providing maintenance for the Campus and perform corrective work, if any, identified during this inspection prior to the end of the maintenance period.
- d. Update operating system firmware and other software to the latest applicable versions.
- e. If a new elevator is used by the Contractor for construction purposes, it shall also be made available for use by the campus during installation of its furniture, fixtures and equipment (as further described in Section 01 11 13, Coordination with Other Contracts), unless such campus use is inconsistent with the contractor's use as permitted in 8.10.5.10 of ASME A17.1 and contrary to the written recommendations of the Contractor's ASME A17.1 Qualified Elevator Inspector.

01 55 19 Temporary Parking

1. Unless otherwise specifically noted, there is no free parking available on site. The Contractor and its employees shall be subject to all the rules and regulations of the SUNY campus, including parking regulations. Parking violations are subject to fines and are the sole responsibility of the Contractor or its employees. Parking within contract limit lines as shown on the drawings will be at no cost for the Contractor and its employees. However, if there is not enough space for all its employee parking and /or its employees choose on their own to use campus parking spaces, additional Contractor employee parking may be permitted and arranged within Campus parking lots on a limited basis, as approved by the Campus and subject to applicable campus traffic regulations and parking fees.
2. All vehicles are required at all times to be registered with the Campus' Public Safety Unit. Campus roads are subject to the New York State Vehicle and Traffic Laws, which shall be followed at all times by the Contractor's vehicle operators. All unlicensed work vehicles used by the Contractor shall be moved on campus roads through one of the following methods only:
 - a. Escort the unlicensed vehicle with two licensed vehicles with flashers, one in front and one behind the unlicensed vehicle.
 - b. Transport the unlicensed vehicle on a licensed flatbed or other licensed transport vehicle.
3. All costs associated with temporary parking, both direct and indirect, shall be considered included in the base bid. Costs may include staging area improvements, permits, wage premiums, and contractor time, labor, effort, etc.

01 55 26 Traffic Control during Construction

Not used.

01 55 29 Staging Area and Storage of Materials

1. The Contractor shall store materials and equipment within the Contract Limit Lines as designated on the drawings or as approved by the Consultant, and in compliance with the Fire Code of New York State. Sequence and manage the work to account for the extremely limited space for storage and work-related activities provided in the available staging area.
2. All materials shall be stored in a neat and orderly manner and shall be protected against the weather by a weatherproof temporary storage facility or trailer. Protect material during shipping against any damage from weather, including road salt.
3. Security for stored materials shall be the responsibility of the Contractor.
4. Storage of materials is not permitted on the roof of any building.
5. The Contractor, at its expense and in compliance with the Fire Code of New York State, will be permitted to place its storage, trailer/field office(s) with appropriate utilities, and other temporary structures within the Contract Limit Lines as indicated on the drawing or as approved by the Consultant. Prior to installing and/or relocating any such structure, provide a layout showing separation distances in accordance with NFPA 241, Table 4.2.1.
6. Access to the construction site for delivery of materials and equipment shall be as indicated on the drawings or as approved by the Consultant. Temporary parking for the loading and unloading of the same shall be arranged with prior approval of the Campus.
7. The Contractor shall always keep access routes, and parking and staging areas clean of debris and other obstructions resulting from the work.
8. If petroleum products are brought on campus in stationary containers of 55 gallons or larger, the Contractor shall provide a certification to the campus, stamped by a professional engineer currently licensed in New York State, that product storage, spill prevention, training, testing, inspections, handling and dispensing methods are in compliance with all applicable federal and state rules and regulations, including EPA rule 40 C.F.R. Part 112. The campus may add the contractor's certification(s) to their Oil Spill Prevention Control and Countermeasure (SPCC) Plan as an amendment. This certification shall be provided to the Fund two weeks ahead of any product or container(s) delivery and the campus shall be notified promptly of the removal of any container(s).
9. Prior to utilization on this project, the locations of cranes, mixers, boom trucks, forklifts, welding machines, generators, field offices, workbenches, cutters, hose lines, etc., must be reviewed in a

pre-installation meeting with the Consultant. In addition, submit a complete lifting procedure safety plan, operator's license, an annual inspection report, and a current inspection certificate for each crane, boom or lift proposed. Prior to and during any lifting, properly erect, remove, maintain and replace any required safety and/or traffic barriers.

10. Provide a chain link fence around staging, storage, parking, etc. areas that is 8'-0" high. Cover all fence fabric with black closed mesh woven polypropylene with 95% blockage and finished with binding and grommets. Reinforce posts and add additional posts and braces as required to support the additional wind load created by installation of the fabric. Secure fabric at 2'-0" by 2'-0" grid intervals and inspect and repair all attachments points monthly. Tears or holes greater than 6" in one dimension shall be repaired weekly. Minimum post size shall be as required for a 70 mph wind. Gates shall be a minimum of 20 feet across, double swing leaves with a drop rod to secure them in place while in the closed position. All gates shall include heavy duty padlocks, keyed alike, with 10 spare keys for each given to the Consultant for distribution. Provide continuous top and bottom rails. All areas within the fence shall have all grass, weeds, etc. mowed when it exceeds 6" in height. Contractor shall clear snow as necessary within fenced areas. Snow from within the fenced areas shall be moved outside the fenced areas, transported and legally disposed of offsite. Snow outside the Contract Limits will be removed by the campus. Set fence posts and supports in the manner that facilitates the removal of snow by the campus. True and plumb the fence posts on a monthly basis.
11. Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated. The use of drone(s) during work on site is contingent on written approval from the campus.
12. Contractor shall clear extraneous matter (snow, precipitation, wind bourn organic matter, bird/animal carcasses, etc.) from work areas as necessary to perform work. Extraneous matter from within the work areas shall be moved outside the work areas, transported and legally disposed of offsite. Extraneous matter outside the Contract Limits will be removed by the campus.
13. Provide and maintain temporary hardware cores and furnish permanent cores and keys for all locks installed on all doors and other secured openings as specified in the Door Hardware section. For temporary cores at all exterior doors and fifteen (15) interior doors selected by the Consultant to spaces with stored campus furnished equipment, provide keyed cores with unique keys and a master key; provide ten (10) sets of the latter keys to the consultant. Remove the temporary cores as the campus installs the permanent cores and keying when instructed by the CM.

01 56 19 Noise Mitigation Measures

Employ the following measures during the work of this contract:

1. Maintain all construction tools and equipment so that they operate at normal manufacturer's operating specifications, including at peak loading. Maintain noise created by tools and equipment below the levels in the noise level guidelines in the Federal Highway Administration Roadway Construction Noise Model User's Guide, as currently amended, page 3 (the Guide). If an individual piece of equipment exceeds the level specified in the Guide, then either perform maintenance to demonstrate a good faith effort, notwithstanding the model year of the

equipment, to mitigate the noise by a measurable level acceptable to the Consultant, or to replace the equipment with equipment that complies with the level in the Guide.

2. Equip all tools and equipment being operated on site with the appropriate manufacturer's recommended noise reduction device(s), including a muffler and jacket, free from air or exhaust leaks.
3. Equip specialized vehicles with noise-insulating material that does not interfere with the engine operation and/or other manufacturer recommended techniques to reduce noise. Prevent all unnecessary vehicle engine-idling on site. Equip all vehicles with the installation of quieter backup warning devices where permitted by OSHA.
4. Cover portable compressors, generators, pumps and other such devices with noise-insulating fabric, employed so as not to interfere with engine operations, or employ other manufacturer recommended techniques to reduce noise.
 - a. Implement a formal noise mitigation training program for all field-worker supervisory personnel including sub-contractor supervisors. Supervisory personnel shall field-train all field workers in an effort to minimize construction noise.
 - b. Cooperate with the Campus to coordinate the work whenever possible so as to minimize the impact on the facility and use quieter devices and other noise mitigation methods, such as blankets and barriers.
5. Noise and vibration control: Prevent the nuisance of noise and vibration to occupants of adjacent spaces, buildings and of surrounding facilities, and provide sufficient means and equipment for minimizing noise. Rigging and moving heavy material and equipment, drilling and demolition of concrete, steel, masonry, etc. must be conducted during off hours. No rigging, drilling and/or demolition shall occur between 9 AM and 6 PM on normal work days. a. For other work besides rigging, drilling and/or demolition, to minimize disturbance to adjacent spaces occupied by the Campus, a daily "Quiet Period" will be required when the adjacent spaces are occupied by the Campus. The "Quiet Period" will be from 9:00 AM to 6:00 PM, during which time the Contractor will be restricted to performing only work producing less than 65 decibels and less than 0.05 vibration amplitudes (in/sec) in any campus occupied area adjacent to the work area. Occasional cyclic vibrations with duration greater than 2 seconds of not more than 0.15 in/sec may be permitted if the Contractor demonstrates that such work is not disturbing to occupants. Use sound and vibration meters daily as needed to monitor and enforce compliance with this restriction. Provide a person(s) trained in the use of the sound meters to perform continuous monitoring and with authority to stop work that produces noise at 65 decibels or higher. Do not rely on notice from the campus or others regarding noise exceeding this requirement.

01 57 23 Storm Water Construction Permit Responsibilities ("Not Used")

01 58 13 Project Sign ("Not Required")

1. No Contractor identification signage shall be erected or hung from fencing or other construction without the approval of the Fund. Contractor shall provide specific text, size, location, and number of signs for approval of the Fund.
2. The Contractor shall furnish, erect and maintain, at the site of the work, the exact location thereof to be designated by the Consultant, a construction sign, in the form prescribed by the Contract Documents, containing the title of the Project, the Fund's name, the names of the Consultant, Contractor and subcontractors engaged in work on the Project and such other data and information as may elsewhere be prescribed in the Contract Documents.

01 60 00 10 U.S. Steel

All structural steel, reinforcing steel, or other major steel items to be incorporated in the work shall, if this Contract is in excess of \$100,000, be produced or made in whole or substantial part in the United States, its territories or possessions. Upon request from the Consultant, provide information from suppliers, fabricators and installers identifying the place of manufacturer and the country of origin for all steel items incorporated into the work.

01 60 00 20 Non-Asbestos Products

1. All materials specified herein shall contain no asbestos.
2. Provide "Contains No Asbestos" permanent labels applied to the exterior jacket of all pipe insulation at 20 foot intervals with a minimum of one (1) label for each service in each work area.
3. The use of vermiculite in products and systems installed in the work is acceptable if the product /system manufacturer provides the MSDS sheet showing that no asbestos is present and submits a certification of the origins of the vermiculite showing that it is not from a mine contaminated with asbestos.

01 60 00 30 Products

All products shall be new and installed on the project within one year of manufacture, and no recycled, reconditioned, or reused products shall be used unless expressly noted otherwise in the technical specifications.

01 64 00 Campus-Furnished Products ("Not Used")

01 66 00 Equipment Storage and Handling Requirements

1. Store equipment in accordance with the manufacturer's recommendations, including, but not limited to, providing anti-condensation heaters for electrical or other equipment, or other temporary measures to mitigate impact of environmental conditions in the storage location when such conditions vary from manufacturer recommendations. In addition to the requirements of the technical specifications and Sections 4.13 and 4.14 of the Agreement, for equipment that is stored, delivered and/or installed for work not yet accepted by the Fund, provide and maintain a preventive maintenance log (Log) that documents maintenance activities performed. (See Sections 4.13 and 4.14 of the Agreement, which requires the Contractor to perform these maintenance activities.)

2. In the Log, list equipment individually. For equipment listed, list the manufacturers' recommended maintenance activities; recommended maintenance tools, lubricants, parts and other items needed to perform maintenance; recommended frequency for performing maintenance activities; the qualifications of the workers performing the maintenance activity; anticipated/scheduled dates for performing the maintenance activity; the actual date the maintenance activity was performed; the name of the Contractor's employee who supervised performance and other information requested by the Consultant. See sample layout below:

preventive maintenance log									
Equipment	manufacturers' recommended maintenance activities	maintenance tools, lubricants, parts and other items	frequency of activity	qualifications of the workers	anticipated/scheduled dates	actual date performed	Name of supervisor	Other	Comments
Item name	Lubricate lubrication points	ISO Grade 32 synthetic lubricant	after each 50 hours of use	Trained in accordance with manufacturer's guidelines	xx/xx/xxxx	xx/xx/xxxx	Mr. Contractor		May need to perform every 25 hours due to jobsite environmental conditions

- Prior to delivery of equipment to the site or storage location, submit the Log to the Consultant for approval.
- After delivery of equipment, upon periodic requests of the Consultant, submit the Log for inspection and review.
- Prior to acceptance of equipment, submit the Log showing all maintenance activities completed for the equipment proposed for acceptance.
- Provide timely notification and access for the Consultant and the Fund to witness any preventive maintenance activities listed in the Log.
- In addition to the above maintenance, where equipment or systems are used during construction for temporary purposes (such as heating, cooling, or other construction uses), provide additional maintenance, cleaning and other activities recommended by the manufacturer for the environmental conditions in which their equipment operates.

01 71 23 Field Engineering

- In addition to Section 2.24 of the Agreement, employ an independent Land Surveyor (a person not in the regular employment of the Contractor or having any vested interest in the Contractor's business), licensed to practice in the State of New York, for the duration of the Work, to supervise and certify the accuracy of the survey work, including the following:
 - During the work, submit progress copies for use in Section 1C "Coordination Drawings" and when requested by the Consultant. Upon completion of the Work, submit a certificate signed and sealed by the Land Surveyor, stating that the elevations and locations of the Work are in conformance with the Contract Documents.
 - Maintain a complete and accurate log of control and survey work as it progresses. Utilize recognized engineering survey practices. Furnish all tools, equipment, and materials required to perform the work.
 - Verify locations of control points prior to starting work. Control datum for survey is indicated on the Drawings. Confirm permanent survey markers to be used as benchmarks for vertical control on the Site where indicated on the Drawings and referenced to established control points. Record locations, with horizontal and vertical data to within one one-hundredth of a foot, on Project Record Documents.

- d. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means.
- 2. Survey and record locations of site improvements including utility locations and invert elevations and
 - a. Power distribution and drainage structures: provide as built inverts at each end of each pipe or conduit.
 - b. Pipes and conduits ending without structures: provide as built inverts at each end of each pipe or conduit.
 - c. Structures: as built centerlines and frame elevation.
- 3. Survey and record locations of building improvements within one week of erection, or as approved by the consultant, including:
 - a. In all multiple-story construction, the Contractor shall establish and maintain line marks at each floor level and grade marks four (4) feet above the finished floor at each floor level.
 - b. Grid, perimeter and axis for structures.
 - c. Building foundation perimeter, column locations, and floor, roof, pit and sump elevations.
 - i. Provide as built centerlines and perimeter of columns and piers.
 - ii. After the placement of concrete on each level, provide spot elevations on each level on each point of a 10-foot by 10-foot grid starting at the northeast corner of each floor. Show contours at one tenth of a foot where applicable.
 - iii. Perimeter of all floor opening locations relative to structural grid.
 - iv. After completion of the roofing membrane, provide spot elevations on each level on each point of a 10-foot by 10-foot grid starting at the northeast corner of the building. Show contours at one tenth of a foot where applicable.
 - d. Inverts of foundation and under drain piping at sumps and cleanouts.
 - e. For horizontal storm drainage piping suspended below decks, underside elevation spaced at not more than 10 feet on center.

01 71 36 Non-Destructive Building Examination

Prior to drilling, coring, cutting or demolishing existing or previously installed substrates, such as concrete and masonry, employ an experienced firm to investigate and locate items concealed in substrates that may be impacted by the work. Locate items such as reinforcing bars, tendons and other structural steel; conduits, piping, ducts and other concealed trade work; voids, substrate thickness and layers; and other concealed conditions within the substrates. Locate by scanning existing substrates with a radar system having a 2.7 GHz antenna (or equivalent system appropriate for the work). As concealed items are discovered and as needed to coordinate with new work, mark out location of such items on the substrate surfaces. Record and save all electronic data acquired during the scanning. If conditions are discovered that differ substantially from those anticipated, provide all electronic data to the Consultant with the notice required by Section 2.12 of the Agreement.

01 73 00 10 Information required for Rebates, Grants, Awards and/or other Programs

In addition to Section 4.11 of the Agreement, for the work listed below, provide invoices, receipts and other documents from suppliers, subcontractors and others to whom the Contractor has allotted any portion of the work. Such invoices, receipts and other documents shall be originals as provided by the suppliers, subcontractors and/or others. In addition, all invoices, receipts and other documents shall have the complete and proper information required for the applicable rebate, grant, award or other program. To avoid withholding of progress payments, submit samples of invoices, receipts and other documents showing the required information and revise samples as directed by the Consultant.

Section 01 73 00 10 applies to the following work:

01 73 29 Cutting, Patching and Repairs

1. The Contractor shall do all cutting, fitting, and patching of its work that may be required to make its several parts come together properly and fitted to receive or be received by work of other Contractors as shown upon or reasonably implied from the Drawings and Specifications for the completed project.
2. Any cost caused by defective or ill-timed work or service disruption shall be borne by the party responsible therefor. Except as otherwise expressly provided in the Contract Documents, the Contractor shall not cut or alter the work of any other Contractor or existing work without the consent of the Consultant and the Fund.
3. Existing construction finishes, equipment, wiring, etc., that is to remain and which is damaged or defaced by reason of work done under this contract shall be restored by the Contractor to a condition satisfactory to the Fund, or replaced with new, at no additional cost.
4. Existing surfaces, materials, and work shall be prepared as necessary to receive the new installations. Such preparatory work shall be as required by the conditions, and in each case shall be subject to approval by the Consultant and the Fund.
5. Newly exposed work or surfaces which are presently concealed shall be made to match existing corresponding or adjoining new surfaces as directed, and the materials and methods to be employed shall be subject to approval by the Consultant and the Fund.
6. All new, altered, or restored work in the building and on the site shall match existing corresponding work in the material, construction finish, etc., unless otherwise specified or required by the drawings.
7. Holes, openings, gaps and voids created by removals shall be filled solid to match existing corresponding or adjoining new surfaces as directed, and the materials and methods to be employed shall be subject to approval by the Consultant and the Fund.
8. Do not cut and patch structural elements in a manner that would reduce their load carrying capacity or load-deflection ratio. Do not cut and patch operating elements or safety related

components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.

9. If possible, retain the original installer or fabricator employed under this contract to repair, cut and patch exposed work or, if it is not possible to engage the original installer or fabricator, engage another recognized experienced and specialized firm acceptable to the Consultant.
10. Where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required to minimum disturbance of adjacent surface. Temporarily cover openings when not in use. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
11. Where removal of walls or partitions extends one finished area into another: Patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance; Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance. Where patching occurs in a smooth painted surface: extend final paint coat over entire unbroken surface containing the patch, after the patched area has received.
12. Where the extent of patching of portions of the Project is significant and the need for this significant patching is due to the Contractor's means and methods, skill and labor, equipment operations, sequence of trades, lack of temporary protective facilities and/or other actions during the performance of the work, then the significant patching shall be replaced with new work.
 - a. The Consultant will determine if patching must be replaced with new work using the following process.
 - i. Step 1: The Consultant will evaluate the risks associated with the Patching (such as water or water vapor infiltration into the work), the esthetic impact of visible Patching, the impact that Patching has on future maintenance, custodial or other campus operations and/or other objective criteria that it may deem reasonable during the evaluation of the Patching. Based on this evaluation, the Consultant may recommend moving on to Step 2.
 - ii. Step 2: The Consultant will count and measure the amount of Patching using the most reasonable unit of measurement applicable. The sum of these counts and measurements will be the total amount of Patching.
 1. The Consultant will determine the overall limits (Limits) of the portion of the Project with the Patching. The Limits will include all the Patching counted and measured above plus reasonably adjacent portions of the Project that may be without Patching.
 2. The Consultant will measure the Limits using same unit of measurement used to measure the Patching. This quantity will define the extent of the Limits of the portion of the Project with the Patching.
 3. Using the figures calculated above, the Consultant determines the number of Patches and the percentage of Patching that exists within the Limits. The work within Limits shall be replaced with new work if:

4. If the number count of Patches within the Limits exceeds 2 (two) per 100 (one hundred) square feet (or other appropriate unit of measurement),
or
 5. If the percentage of Patching exceeds 15% (fifteen percent) within Limits.
- b. The Consultant will determine the reasonable extent and type of work required to replace the Patching and issued detailed drawings and instructions to the Contractor for its use in completing the corrective work.

01 74 00 Clean-Up

1. Periodic Cleaning: The Contractor shall at all times during the progress of the work keep the Site free from accumulation of waste matter or rubbish and shall confine its apparatus, materials and operations of its workers to limits prescribed by law or by the Contract Limit Lines, except as the latter may be extended with the approval of the Consultant and the Fund. Provide cleaning and waste disposal in accordance with the Fire Code of New York State and as required by NFPA 241 and as recommended in its Annex A, Explanatory Material. Cleaning of the structure(s), once enclosed, must be performed daily and removal of waste matter or rubbish must be performed at least once a week unless more frequent performance is required by NFPA 241 and recommended in its Annex A, Explanatory Material.
 - a. If open topped dumpsters are within 35 feet of any structure, empty and remove combustible contents from these dumpsters at the end of each shift.
 - b. Provide periodic pest and vermin control as required to deliver the completed building completely free of any infestation.
 - c. Waste Disposal: Do not dispose of, bury, or burn waste materials on-site. Grinding of concrete, asphalt or masonry for disposal shall not occur on-site. Do not wash waste materials down sewers or into waterways.
 - d. Prior to installation of ceilings, inspect all above ceiling areas and leave the completed above ceiling work and areas without the need of further cleaning of any kind and with all work in new condition and perfect order.
 - e. In addition to and in coordination with testing and cleaning specified in Divisions 2 through 48 inclusive, periodically flush and clean air and fluid new and existing systems in portions (sections) as the work is installed. Flushing and cleaning of existing systems is limited to portion modified in this work and portions shut down by this project (dead legs), where such portions were left without flow. Such dead legs shall be flushed and cleaned prior to restoration of use.
 - i. Submit a flushing and cleaning plan to the Consultant for approval prior to beginning installation of a system.
 - ii. Unless otherwise approved by the Consultant, select portions of systems for cleaning in a manner that limits the maximum size of a portion cleaned in a single effort to an individual riser, to individual floor system and to not more than 1,000 linear feet in length of the installed portion of a riser or individual floor system, whichever is less.

- iii. Where portions of systems are excluded from the portions being cleaned, provide all additional work required to functionally extend systems around the excluded and/or uncompleted portions and to fully separate the portions being cleaned from the excluded and/or uncompleted portions.
 - iv. Unless otherwise approved by the Consultant, fully separate fixtures, appliances, and equipment from the portions being cleaned by providing all additional work required to functionally extend systems around the excluded fixtures, appliances, and equipment and to fully separate the portions being cleaned from the excluded fixtures, appliances, and equipment.
 - v. Provide temporary means for providing and moving air and/or fluid at the rate required to flush and clean the portions of systems being cleaned unless use of permanent equipment is specifically approved by the consultant. If the permanent equipment is permitted to be used, provide a letter from the manufacturer's technical representative agreeing to such use, stating that its use shall not limit their warranty and excluding the time their system is used from the project specific warranty period. See 01 78 36, Warranties, for additional requirements.
 - vi. Capture, treat and legally dispose of air and fluid discharges, effluent and any materials cleaned from a systems or portions of a system. When approved by the consultant, the campus sanitary system may be used to convey discharges if the local treatment facility provides written confirmation to the Contractor that it will accept such discharges.
- f. In addition, during the course of the work, the Contractor shall remove dust, debris, rubbish, and other materials scattered and dispersed from its work area into other spaces, sites, equipment or materials owned or controlled by others. Engage qualified firms and competent workers to restore the use or appearance of such spaces, sites, equipment or materials to their original condition and to the satisfaction their owner or controller. If such scattering or dispersal occurs, provide qualified workers during all periods of subsequent work to provide daily monitoring, containment, continuous cleaning, and other actions or modifications to work activities as required to mitigate future scattering or dispersal.
- g. Provide and maintain sweeping compound to assist in daily cleanup as needed for the duration of the project. Provide, maintain and replace as necessary general use construction push brooms (soft bristle), construction push brooms (course bristle), heavy-duty, flat edge shovels and dustpans.
- d. Final Clean Up: Upon completion of the work covered by the Contract, the Contractor shall leave the completed project ready for use without the need of further cleaning of any kind and with all work in new condition and perfect order. At least two weeks prior to the start of Final Clean Up, submit a written implementation plan describing cleaning methods, staff, sequence and schedule of activities and other information requested by the Consultant. In addition, upon completion of all work, the Contractor shall remove from the vicinity of the work and from the property owned or occupied by the State of New York, the State University of New York or the Fund, all plant, buildings, rubbish, unused materials, concrete forms and other materials belonging to it or used under its direction during construction or impairing the use or appearance of the property and shall restore such areas affected by the work to their original condition, and, in the event of its

failure to do so, the same shall be removed by the Fund at the expense of the Contractor, and it and its surety shall be liable therefor.

01 74 16 Payment for Planting Maintenance

Not applicable

01 74 19 Construction Waste Management

1. In addition to the requirements of the above Sections 01 35 13, Conducting Work, and 01 74 00, Clean Up, provide and manage a project specific Construction Waste Management Plan (the Plan). The Plan shall have reasonable criteria for recycling and/or salvaging demolition and construction waste generated during the project. The plan shall demonstrate at good faith effort to meet the Campus' goal (the Goal) of recycling at least 50% of the construction and demolition waste generated by this contract.
 - a. Provide the proper labor, equipment and other means for collecting, separating, monitoring, storing, processing, transferring, tracking and transporting waste from the point of creation during the project to the point of its final disposition off the site of the Project.
 - b. The Plan shall outline the means and provisions for separating, recycling and salvaging demolition and construction waste generated during the project. Modify and resubmit the Plan periodically as needed to suit the field conditions of the site that may not have been anticipated in the original submission. The Plan will have a Waste Management Form (in Microsoft Excel) for written reporting on and accounting for all materials transferred from the project site.
 - c. Demolition and removal work on campus shall be limited to the minimum work required to create a debris stream that allows for reasonable handling and transport. Additional work on debris material, such as grinding, cutting or crushing, which may be desired by the Contractor to make the material ready for reuse off-site, shall be performed off-site.
 - d. Prior to generating construction waste, submit the project specific Plan for approval by the Consultant and provide monthly written reports on the progress of the Plan.
 - e. Upon approval of the Plan by the Consultant, it shall be implemented for the duration of the project.
 - f. Any money received by the Contractor for materials recycled, sold or reused off site was considered when the Bid Proposal submitted to the Fund and may be retained by the Contractor. The Contractor is solely responsible for the security of any materials that may be recycled, sold or reused.
2. The Plan shall include, but not be limited to, the following components:
 - a. A list of the waste materials from the Project that will be targeted for reuse, salvage, or recycling. The following materials, as applicable to the project, shall be accounted for (materials that will not be recycled shall be indicated as such):

- i. Cardboard, paper, packaging.
 - ii. Acoustical Ceiling Tiles.
 - iii. Clean dimensional wood, pallet wood.
 - iv. Beverage containers.
 - v. Land clearing debris.
 - vi. Concrete.
 - vii. Stone.
 - viii. Concrete Masonry Units (CMU).
 - ix. Asphalt.
 - x. Metals, such as from banding, stud trim, ductwork, piping, rebar, roofing, windows, other trim, steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
 - xi. Gypsum board.
 - xii. Carpet and pad.
 - xiii. Paint.
 - xiv. Asphalt roofing shingles if applicable for any existing building demolition.
 - xv. Rigid Foam.
 - xvi. Glass.
 - xvii. Plastics.
 - xviii. Woods.
 - xix. Other materials required by regulations and/or requested by the Consultant
- b. Provide a description of the proposed means of waste management, including collecting, sorting and transporting the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site for off-site sorting).
 - c. If the waste management work is assigned in whole or part to a subcontractor, vendor or other entity, provide a description of who does what from the point of creation during the project to the point of its final disposition off the site of the Project.
 - d. Provide an estimate of packaging materials generated and note whether suppliers will eliminate or take back packaging at time of delivery.
 - e. Provide the name and address of the landfill(s) where trash will be disposed of and the applicable landfill tipping fee(s).
 - f. Provide the name and address of the recycling facilities(s) where materials will be sent for recycling, how it will be recycled, and the applicable fee(s) paid or payment(s) received.
 - g. Include any additional information deemed relevant to describe the scope and intent of the Plan to the Consultant.
 - h. Provide documentation for materials or equipment to be removed from the site for sale or reuse, or turned over to the Campus, which are classified as recycled materials. Documentation shall include the description of the materials or equipment, weight or quantity of materials or equipment, and a receipt for the sale, a letter on Contractor's letterhead indicating the reuse or the Campus' signed receipt of materials or equipment, and the applicable fee(s) paid or payment(s) received.
- 3. In conjunction with payment applications, submit a monthly Waste Management report. This report shall include copies of waste receipts for the payment period and a completed Waste Management Form for the same payment period in PDF, paper (four copies) and Excel formats.

4. Calculations and supporting documentation to demonstrate end-of-project recycling rates meeting the requirements of the Construction Waste Management Plan. The process for recording and assembling documentation shall be as follows:

- a. Record and document the total weight (in tons) of all demolition and construction waste materials sent to the landfill. The Waste Management Reporting Forms shall be used as the basis for determining the total amount of waste landfilled for the project. The monthly reporting forms shall specify:
- i. The number of dumpsters or other containers sent to the landfill for that month.
 - ii. The volume (in cubic yards) of each dumpster or container sent to the landfill for that month.
 - iii. The type of waste contained in each dumpster or container.
 - iv. The weight of the waste in each dumpster or container. If the weight of the waste is not directly measured for each dumpster or container, the following Solid Waste Conversion Factors shall be used to convert the volume of waste to weight:

Solid Weight Conversion Factors	
Mixed Waste	350 lbs/cubic yard
Wood	300 lbs/cubic yard
Cardboard	100 lbs/cubic yard
Gypsum Board	500 lbs/cubic yard
Rubble	1,400 lbs/cubic yard
Steel	1,000 lbs/cubic yard

- v. In addition, provide the name of the landfill that will be accepting the materials. Receipts or other equivalent proof of facility reception of materials is required.
- b. Record and document the total weight (in tons) of all demolition and construction waste materials recycled or salvaged. Monthly Waste Management Reporting Forms shall be used as the basis for determining the total amount of waste recycled or salvaged for the project. The monthly reporting forms shall specify:
- i. The number of dumpsters or other containers of recycled or salvaged materials for that month.
 - ii. The volume (in cubic yards) of each dumpster or container of recycled or salvaged materials for that month.
 - iii. The type of recycled or salvaged material contained in each dumpster or container.

- iv. The weight of the recycled or salvaged material in each dumpster or container. If the weight of the material is not directly measured for each dumpster or container, the Solid Waste Conversion Factors listed for landfill waste above shall be used, where applicable, to convert the volume of material to weight. For materials not contained in the Solid Waste Conversion Factors above, propose a conversion factor for review by the Consultant.
 - v. In addition, provide the name of the receiving facilities/companies that will be purchasing or accepting the recycled or salvaged materials. Receipts or other proof of facility reception of materials is required.
 - vi. For materials separated for recycling off-site, establish a method for tracking the weight of the recycled material. The method shall be included in the Plan for the Consultant review and approval.
 - vii. Summarize and show current progress to date in meeting the contract specific Goal specified in paragraph 1 above.
 - c. Calculate the end-of-project recycling rate percentage by dividing the recycled and salvaged waste (in tons) by the total waste generated (recycled, salvaged, and landfilled waste – also in tons), and multiplying by 100.
 - d. For materials turned over to others for reuse, provide documentation on company letterhead indicating the material(s), the quantity (either by weight or units), the date and the intended reuse of the product.
5. During the work of the Project, provide all labor, containers, bins, dumpsters, and other equipment for the proper removal of all waste, non-returned surplus materials, and rubbish from the site in accordance with the Plan. Oversee and document the results of the Plan. Monitor the collecting, sorting, and depositing of all waste, non-returned surplus materials, and rubbish, in designated areas as per the Plan.
- a. Locations for removal containers, bins and dumpsters shall be coordinated with the Consultant. Relocate containers, bins and dumpsters as needed to suit the field conditions during the work.
 - b. Provide periodic on-site instruction to workers regarding the appropriate separation, handling and recycling, salvage, reuse and return methods to be used by all parties in appropriate stages of the Project.
 - c. Allow for and lay out a specific area(s) to facilitate separation of materials for potential recycling, salvage, reuse and return. Each potential material shall be collected and stored to avoid being mixed with other materials. Recycling and waste bin areas are to be kept neat and clean, and clearly marked. Relocate area(s) as needed to suit the field conditions during the work.
6. For all construction and demolition waste that leaves campus with a manifest, provide copies of manifests in the monthly reports. For each manifest that requires the Campus EPA ID number as the generator of the waste, submit a draft copy for the review by the campus, make any reasonable corrections that the campus requests, and allow one week for the campus to review and sign each completed manifest.

01 78 23 Operating Instructions and Manuals

1. General

- a. The operating instructions and manuals applicable to this contract must be substantially completed before the Project can be used for the purpose for which it was intended.
- b. The Contractor shall furnish three (3) complete printed sets and PDF/A files of operating instructions and manuals for all mechanical and electrical systems involved in the Contract. Operating instructions and manuals include definite and specific instructions on the proper operation and maintenance of the systems. The requirements of this section are in addition to the requirements of Section 01 33 23 Shop Drawings and Samples.
 - i. Furnish sets in phases based on the progress of the work. At no additional cost to the Fund, for products, equipment, systems and installations completed prior to the date of Substantial Completion, obtain and pay for warranty extensions that cover the additional time between the earlier date of their completion and the date of Substantial Completion.
 - ii. Provide PDF/A copies of all submittals (except physical samples) stored and labeled on four (4) sets of archival optical discs, Universal Serial Bus (USB) flash drives or other electronic data storage devices approved by the Consultant that include all documents and tracking logs in a indexed, text searchable, navigable format. PDFs created by scanning are not acceptable unless all images of text are properly and completely transformed into the electronic characters representing the text.
- c. Said instructions and manuals should set forth:
 - i. the manner of operation;
 - ii. the necessary precautions and care to be followed;
 - iii. periodic prevention maintenance requirements; and
 - iv. a complete set of spare parts lists, catalogs, service manuals and manufacturing data on said systems.
- d. Engage a manufacturer authorized service representative(s) to provide and prepare information for each system, subsystem, and piece of equipment.
- e. Submit draft copies of operating instructions and manuals to the Consultant for review and comment in sequence with the commissioning process submittals for the project. If there is no commissioning process specified for this project, submit the draft copies at least six weeks prior to the date the final copies are due.
- f. Provide final copies a minimum of six (6) weeks prior to the date of Substantial Completion or three (3) weeks prior to scheduled training sessions, whichever is sooner.
- g. Final copies shall be complete except for copies of warranties and other items approved by the Consultant for turnover on the date of Substantial Completion.

- h. Unless otherwise approved by the Fund, in the Contract Breakdown required by Section 4.08 of the Agreement, the scheduled value of Contractor provided operating instructions and manuals shall be 5% of the amount estimated for the work covered in the operating instructions and manuals.

2. Deliverables for each complete set include:

- a. Use 8-1/2 x 11-inch text pages bound in capacity expansion binders with durable plastic covers and sides identified with printed titles "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder. 11 x 17 paper may be used if each page is folded three times to fit the 8-1/2 x 11 format.
- b. Organize into sets of manageable size.
 - i. Organize the manual into separate sections by CSI number based on the table of contents of the project manual, for each system and subsystem, and a separate section for each piece of equipment not part of a system. Arrange content within sections alphabetically.
 - ii. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- c. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the binder, and cross-referenced to Specification Section number in Project Manual.
- d. When multiple binders are required, use the same type of binder for each and prepare a printed Table of Contents for each binder, with each product or system description in the binder identified. Also include comprehensive table of contents for all binders in each binder of the set.
- e. Internally subdivide the binder contents with permanent page dividers, logically organized as described below, with tab titles clearly printed under reinforced laminated plastic tabs:

Part 1: Directory, listing names, addresses, email and telephone numbers of Consultant, Contractor, subcontractors, and suppliers.

Part 2: Operation and maintenance instructions, arranged by subdivided by specification section, then by system, then by subsystem, then by equipment. Use designations for systems, subsystems and equipment indicated on Contract Documents. In each subdivision, identify the following:

 - 1. Description of system, subsystem, or equipment, as applicable, including:
 - a. Product name and model number. Use designations for products indicated on Contract Documents.

- b. Manufacturer's name.
 - c. Equipment identification with serial number of each component.
 - d. Equipment function.
 - e. Operating characteristics.
 - f. Limiting conditions.
 - g. Performance curves.
 - h. Engineering data and tests.
 - i. Complete nomenclature and number of replacement parts.
- 2. In systems and subsystems, a list of equipment, components and parts.
- 3. Operating instructions and procedures, including:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Instructions on stopping.
 - f. Normal shutdown instructions.
 - g. Seasonal and weekend operating instructions.
 - h. Required sequences for electric or electronic systems.
 - i. Special operating instructions and procedures.
- 4. Operating standards.
- 5. Operating logs.
- 6. Wiring diagrams, as installed.
- 7. Control diagrams, as installed. Describe the sequence of operation, and diagram controls as installed.
- 8. Piped system diagrams, as installed and identify color-coding as installed.
- 9. Precautions against improper use.
- 10. License requirements, if any, including inspection and renewal dates.
- 11. Maintenance instructions for operating parts and components. Include manufacturer's written recommendations and the following:
 - a. 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.
 - b. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 - c. Maintenance and Service Record: Include manufacturers' forms for recording maintenance and inspection.
 - d. Lists of materials, sources of materials and related services.
 - e. Standard maintenance and repair instructions and bulletins.
 - f. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.

- g. Test and inspection instructions.
 - h. Troubleshooting guide.
 - i. Precautions against improper maintenance.
 - j. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - k. Aligning, adjusting, and checking instructions.
 - l. Demonstration and training video recording, if specified.
 - m. Identification and nomenclature of parts and components.
 - n. List of items recommended to be stocked as spare parts with parts identified and cross-referenced to manufacturers' maintenance documentation.
 - o. Prepare supplementary text if manufacturers' standard printed data are not available, applicable or where project specific information is necessary for proper operation and maintenance of equipment or systems.
12. Maintenance instructions for finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
- a. Types of cleaning agents to be used and methods of cleaning.
 - b. List of cleaning agents and methods of cleaning detrimental to product.

Part 3: Project documents and certificates, including the following:

- 1. Approved shop drawings (reduced size copies printed on 11 x 17 paper) and product data.
- 2. Air and water balance reports.
- 3. Photocopies of original warranties (originals submitted per Section 01 78 36, Warranties.)

01 78 36 Warranties

In addition to the requirements of Section 2.25 of the Agreement, provide warranties for products, equipment, systems and installations required by other technical sections of Contract Documents for duration indicated. Warranties shall be individually listed in the project specific submittal log required by 01 33 23, Shop Drawings and Samples.

- 1. All warranties required by Contract Documents shall commence on date / time of Substantial Completion shown on Page A-1 of the Agreement.
 - a. At no additional cost to the Fund, for products, equipment, systems and installations completed prior to the date of Substantial Completion, obtain and pay for warranty extensions that cover the additional time between the earlier date of their completion and the date of Substantial Completion.
- 2. Provide a list of all Contractor provided warranties that are specified in Divisions 1 through 48, inclusive, and list who will inspect the work covered by the warranty (if applicable), when it will

be done, who witnessed it and when, results (pass/fail), follow up action, comments and other information requested by the Consultant.

- a. Unless otherwise approved by the Fund, all inspections must be witnessed and signed off by the Consultant prior to acceptance of Contractor provided warranties that are specified in Divisions 1 through 48, inclusive.
 - b. The Consultant will reject a Warranty issued prior to or without the manufacturer's field inspection of the work, if required in Divisions 1 through 48, inclusive.
3. Unless otherwise approved by the Consultant and if required in Divisions 1 through 48, inclusive, the scheduled value of a Contractor provided warranty in the Contract Breakdown required by Section 4.08 of the Agreement shall be 5% of the amount estimated for the work being warrantied.
4. Furnish and organize original warranties in a separate binder with a durable plastic cover. Organize the binder into separate sections by CSI number based on the table of contents of the project manual. Internally subdivide the binder contents with permanent page dividers, logically organized as described below, with tab titles clearly printed under reinforced laminated plastic tabs. Provide a printed Table of Contents.
 - a. Warranties shall be in the form required by the applicable technical sections of Contract Documents. Include procedures to follow and required notifications for warranty claims.
 - b. Warranty Certification: Written certification from the warrantor that the warranty is in effect and non-retractable due to any of the specified conditions. Warranties submitted without warranty certification will not be accepted.
 - c. Deliver the binder to the Consultant with the written notice of Substantial Completion required by Section 2.23(2) of the Agreement.
5. For uncompleted work delayed beyond date of Substantial Completion, provide updated binder submittal within 10 days after acceptance, indicating date of acceptance as start of warranty period for any work delayed beyond date of Substantial Completion.

Applications for payment after the date of Substantial Completion may not be approved until the warranty certification and warranty documents are delivered to the Consultant.

01 78 39 Project Record Documents

In addition to Section 2.24 of the Agreement, provide the Records Information required by Fire Code part 901.6.3.1 and the Operating Adjustments and Instructions required by Mechanical Code part 1004.7.

01 79 00 Training of Campus Personnel

1. Training of campus personnel in the use of the work of this Project must be substantially completed before the Project can be used for the purpose for which it was intended. The information required by Section 01 78 23 Operating Instructions and Manuals is required for training to occur and be completed.

2. The Contractor shall be responsible for training coordination and scheduling and ultimately for ensuring that training is completed. A draft schedule of all training shall be submitted three months prior to any training and finalized one month prior to the actual training. In addition to these general requirements, additional specific training requirements of campus personnel by the Contractor are specified in other the applicable specifications. The Campus will designate the personnel who will be trained, and some personnel may not be direct employees of the Campus.

****End of 01 00 00 General Requirements***

May 31, 2022 2:37:20 PM

SUNY New Paltz
100 HAWK DRIVE
NEW PALTZ, NY 12561

Dear Kevin Saunders,

Thank you for your recent interest in HP Public Sector Sales. Attached is the price quotation you requested.

Please reference this contract: NY - NY AGGREGATE HARDWARE BUY 20-01[PM20860 RFQ AGG BUY 20-01] when placing this order. The terms and conditions of this contract will apply to any order placed as a result of this inquiry; no other terms or conditions shall apply.

If you should have questions regarding this quotation or need any other assistance, please contact your Inside Account Representative

Orders can be placed electronically at www.hp.com/buy/pshp2b. You can place this order by searching for the HP Customer Quote ID displayed above and simply check out.

Should you choose this order can also be Faxed to 800-825-2329 or emailed to ORDERS-PROCESSING-USA@hp.com.

If you are faxing or emailing this order a sample Purchase Order Document can be downloaded that gives guidance on what is required to place an order with HP. [Click here to download the sample Purchase Order](#)

All orders not placed electronically need to be made out to HP Inc. or HP with the Ordering address referenced below.

The Purchase Order should include the Contract Number in the body of the Purchase Order. Please also be sure to include a copy of the quote, email address, the ship to location or drop ship locations, delivery date requirements and any other special information and if applicable, the HP Authorized Reseller Agent name or authorization number for the HP Agent providing you with support.

Ordering address:
HP INC.
Attn: Public Sector Sales
3800 Quick Hill Road
Bldg 2, Suite 100
Austin, TX 78728

Information & Details

Organization name: SUNY New Paltz
Catalog name: NY - NY AGGREGATE HARDWARE BUY 20-01[PM20860 RFQ AGG BUY 20-01]
Created by: saunderk@newpaltz.edu
Partner Agent ID:
Name: Kevin Saunders
Email: saunderk@newpaltz.edu
Phone: 845-257-3893
Email notification: saunderk@newpaltz.edu
Created: May 31, 2022 2:37:20 PM
Expires: June 30, 2022 2:37:43 PM
Payment method:
Quote total: USD \$1,101.62

Billing Information

OM ID: E76534
Company: SUNY New Paltz
Address:
100 HAWK DRIVE
City : NEW PALTZ
State/Province: New York
Zip/postal code: 12561
Country: US
Attention to: Kevin Saunders
Email: saunderk@newpaltz.edu
Phone: 845-257-3893
Fax:

Shipping Information

Company: SUNY New Paltz
Address:
LC 8
1 HAWK DRIVE
City: NEW PALTZ
State/Province: New York
Zip/postal code: 12561-0000
Country: US
Attention to: Kevin Saunders
Email: saunderk@newpaltz.edu
Phone: 8452573893
Fax:
Requested Delivery date:
Shipping options:
Shipping method: Ship Partial - Ship Items as they become available

Comments:

Invoice instructions:

Shipping instructions:

Quote Summary

Product #	Product Description	MFG#:	Qty	Unit Price	Total Price
	AGG BUY Enterprise vPro Reference Model: 35202389 Configuration: 35446159		1	USD \$1,101.62	USD \$1,101.62
9AW71AV	HP ProDesk 600 G6 Small Form Factor Base Unit -RCTO		1		
6ME13AV	ENERGY STAR Certified		1		
192J5AV	Electronic TCO Certified labeling		1		
9AW73AV	HP ProDesk 600/405 SFF Gold 180W Chassis		1		
9AW83AV	Intel Core i7 10700 2.9GHz 8C 65W CPU		1		
4YH35AV#ABA	OS Localization US		1		
58B31AV	Windows 11 Pro 64 Downgrade Win 10 Pro 64		1		
9WZ35AV	16GB (1x16GB) DDR4 2933 DIMM Memory		1		
9AY27AV	512GB M.2 2280 PCIe NVMe TLC Solid State Drive		1		
2V616AV#ABA	HP USB 320K Keyboard		1		
2V615AV	HP Wired 320M Mouse		1		
9AX08AV	HDMI Port v2		1		
9AY40AV	Intel Wi-Fi 6 AX201 ax 2x2 vPro +Bluetooth 5 WW		1		
Y0L85AV	Intel vPro Upgrade		1		
9AX52AV	DVD-Writer ODD		1		
9AY46AV#ABA	3/3/3 (material/labor/onsite) SFF Warranty US		1		
9AX39AV	Single Unit (Small Form Factor) Packaging		1		

Product #	Product Description	MFG#:	Qty	Unit Price	Total Price
9AY54AV#ABA	HP 600 G6 SFF Country Kit US		1		
163L5AV	Intel CML Core i7 vpro Label		1		
1B3R5AV	SLIM ODD BAY SATA Cable Kit		1		
UE334E	HP 5 year Next Business Day Onsite/DMR Desktop Hardware Support		1		
9UJ13A8#ABA	HP P24h G4 FHD Monitor US		1		
			Subtotal		USD \$1,101.62
			Estimated Tax		USD \$0.00
			Estimated Total		USD \$1,101.62

Unless our contract prohibits it, (a) prices are valid for 30 days from quote date and/or (b) HP may change prices or discounts and reissue quotes immediately if there are increases in costs, tariffs, or other changes outside HP's control.

If the bill to company and address you wish to use is not present at the time of check out please enter it in the "Shipping Instructions" box. The order management team will make sure it is billed to the correct location.

Components of Configurable systems may not be ordered separately. Reference Model ID's and Configuration ID's are not part numbers, they are reference descriptions to your specific configuration.

If you are submitting a hard copy purchase order, please include a printed copy of this quote with your purchase order.

If you place an order for a product that was incorrectly priced, we will cancel your order and credit you for any charges. In the event that we inadvertently shipped an order based on a pricing error, we will issue a revised invoice to you for the correct price and contact you to obtain your authorization for the additional charge, or assist you with the return of the product, if payment was not already made. If payment was already made, HP will work with the agency to correct the invoice. If the pricing error results in an overcharge to you, HP will credit your account for the amount overcharged.

PROJECT N: 81058

Contractor Job #:

Project Name SUNY New Paltz - Elevator Modernization
Revised By:
DATE:

Status Key: **NYS** - Not Yet Submitted **SCH** Scheduled for submission **SUB** - Submitted & Received **APP**-Approved No Exceptions Taken **MCN**- Make Corrections Noted **R&R**- Revise & Resubmit **REJ**- Rejected **SSI**- Submit Specified Item **RFR** - Resubmit for Record Only
Submittal Type Key: **SD** - Shop Drawing **DAT** - Project / Product Data **SAM** - Sample **CAL** - Calculations **TEST** - Test report **WAR** - Warranty **CERT** - Certification **QC** - Quality Control / Qualifications submittal **EXT** Extra Stock / tool **OMM** - Operations Maintenance Manual **REP** Report **OTH** - descr in comments

For Bidding, Printing columns to the left of "Description / Subject of Submittal" is optional

Line No.	Contractor ID No.	CSI Section No.	Paragraph No.	Revision / Version No. (if appl.)	Description / subject of Submittal	Submittal Action Category	Submittal Type	Status	Firm preparing Submittal	Firm Reviewing Submittal	Proposed Submission Date	Actual Submission Date	Requested Approval Date	Actual Approval Date	Date Submission Returned	Purchasing Date	Fabrication Date	Installation Date	1st Delivery Inspected Date	Pre Install. Conf. Date	Mock up inspected Date	Other (desc.)	Comments
1		00 52 00	Section 2.18		List of Subcontractors	Action	DAT	NYS															Due prior to work and not later than 30 days after NTP
2		00 52 00	Section 2.12		Site Conditions	Informational	REP	NYS															if needed
3		00 52 00	A-Sec 2.24-1		Record Drawings	Informational	OTH	NYS															
4		00 52 00	A-Sec 3.06		Monthly Reports	Informational	REP	NYS															
5		00 52 00	A-Sec 4.08		Schedule of Values	Action	OTH	NYS															
6		00 52 00	A-Sec 6.07-1		MBE/WBE Monthly Utilization Reports	Informational	REP	NYS															
7		00 52 00	A-Sec 2.06		Superintendent Submission	Action	OTH	NYS															
8		01 18 13			Utility Shutdown Schedule	Action	OTH	NYS															
9		01 26 13			Request for Information (RFI) log	Action	OTH	NYS															
10		01 29 00 10			Meter readings	Informational	DAT	NYS															monthly
11		01 31 19			bi-weekly reports	Informational	REP	NYS															
12		01 31 19 10			Existing Conditions reports	Informational	REP	NYS															if needed
13		01 31 19 10			Existing Conditions report	Informational	REP	NYS															
14		01 32 13			Off campus street access	Informational	REP	NYS															if needed
15		01 32 13			off campus street usage	Informational	OTH	NYS															
16		01 32 16			Project Schedule and Submittal Schedule	Action	OTH	NYS															
17		01 32 33			Project Photographs	Informational	REP	NYS															Due prior to work
18		01 33 23			Submittal management website	Action	OTH	NYS															if needed
19		01 33 23			Archival submittals	Informational	OTH	NYS															if needed
20		01 33 23 10			Coordination Drawings	Action	SD	NYS															Due prior to work
21		01 35 13			emergency action plan	Informational	DAT	NYS															
22		01 35 13			daily reports	Informational	REP	NYS															Due before waste leaves site
23		01 35 13			SWPPP modifications	Informational	DAT	NYS															
24		01 35 13			SWPPP inspection logs	Informational	DAT	NYS															
25		01 35 13			Diesel vehicle forms	Informational	DAT	NYS															if needed
26		01 35 13			Temporary Traffic Control plans	Action	SD	NYS															
27		01 35 13			ID Badge Format	Informational	OTH	NYS															
28		01 35 13			daily manpower counts	Informational	REP	NYS															
29		01 35 23			Safety Procedures Manual	Informational	DAT	NYS															
30		01 35 23			Names of "competent" persons	Informational	DAT	NYS															
31		01 35 23			Pre-Demolition utility plan	Informational	SD	NYS															
32		01 35 23			Temporary Egress / Barrier Plan	Informational	OTH	NYS															
33		01 35 23 10			MSDs sheets	Informational	DAT	NYS															if needed
34		01 41 13			Special Inspection submissions	Action	TEST	NYS															
35		01 41 13			Fire Alarm System License	Informational	OTH	NYS															
36		01 41 13			Master Electrical Inspector	Informational	OTH	NYS															
37		01 41 13			Code test and inspection forms	Action	REP	NYS															
38		01 41 13			Name of Commissioning contact	Action	REP	NYS															
39		01 51 16			Fire watch plan	Action	REP	NYS															
40		01 51 23			Cooling tower maintenance plan	Action	REP	NYS															
41		01 52 13			Field Office equipment information	Action	REP	NYS															
42		01 54 13			Plan for Use of Elevator(s) for Construction	Action	REP	NYS															
43		01 55 29			lifting procedure safety plan	Informational	DAT	NYS															if needed
44		01 55 29			Petroleum Spill Compliance Certification	Informational	OTH	NYS															
45		01 60 00 20			Vermiculite origins certification	Informational	OTH	NYS															
46		01 64 00			Campus-Furnished Products submittals	Action	SD	NYS															if needed
47		01 66 00			Preventive maintenance log	Action	REP	NYS															
48		01 71 23			Field Engineering surveys	Informational	DAT	NYS															
49		01 73 00 10			information for Rebates/Grants/Awards/Programs	Informational	DAT	NYS															
50		01 74 00			Fluid system flushing and Clean Up plan	Informational	DAT	NYS															
51		01 74 00			Final Cleanup Plan	Informational	DAT	NYS															
52		01 74 16			Planting Maintenance logs	Informational	DAT	NYS															
53		01 74 19			Construction Waste Management Plan	Action	OTH	NYS															
54		01 74 19			Construction Waste manifests/monthly reports	Action	OTH	NYS															
55		01 78 23			Operating Instructions and Manuals	Action	OTH	NYS															
56		01 78 36			Warranties	Action	OTH	NYS															
57		01 79 00			Schedule of Campus training	Action	OTH	NYS															
58		01 79 00			Outlines of actual training	Action	OTH	NYS															
59					Consultant adds submittals listed in Technical specs after the above																		
60					Consultant should also adjust print area to only include rows with text																		
61		02070			Schedule	Information		NYS															
62		02070			Details & Procedures for dust and noise control	Information		NYS															
63		02070			Quality Control Submittals	Information	QC	NYS															
64		07147			Product Data	Information	DAT	NYS															
65		07147			Quality Control Submittals	Information	QC	NYS															
66		07147			Warranty	Information	WAR	NYS															
67		07147			Mock-up	Information		NYS															
68		07270			Product Data	Information	DAT	NYS															
69		07270			Shop Drawing	Information	SD	NYS															
70		07270			Quality Control Submittals	Information	QC	NYS															
71		07270			Mock-up	Information		NYS															
72		07270			Guarantee	Information		NYS															
73		07270			Low Emitting Materials Compliance Submittals	Information		NYS															
74		07520			Product Data	Information	DAT	NYS															
75		07520			Membrane Manufacturer's Letter of Intent to Manufacture	Information	WAR	NYS															
76		07520			Shop Drawings	Information	SD	NYS															
77		07520			Quality Control Submittals	Information	QC	NYS															
78		07520			Contract Closeout Submittals	Information		NYS															
79		07900			Product Data	Information	DAT	NYS															
80		07900			Samples for Initial Selection	Information	SAM	NYS															
81		07900			Samples for Verification	Information	SAM	NYS															
82		07900			Quality Control Submittals	Information	QC	NYS															
83		07900			Mockups	Information		NYS															
84		07900			Low Emitting Materials Compliance Submittals	Information		NYS															
85		10522			Product Data	Information	DAT	NYS															
86		10522			Shop Drawings	Information	SD	NYS															
87		10522			Maintenance Data	Information		NYS															
88		10522			Warranty as specified in Article 1.07	Information	WAR	NYS															



Weekly Fire Code Review

SUCF Project No.

Contractor:

Firm ID:

Location(s):

Contractor Fire Prevention Program Superintendent:

Campus Fire Prevention Program Manager:

Code Enforcement Official (CEO):

#	<i>All bracketed references are from NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations, unless otherwise noted. This is not a complete list of requirements.</i>	YES	NO	N/A
1	Temporary Separation Walls {8.6.2}: Is there adequate separation between the work area and the rest of the building (One hour separation walls and 45 min opening protectives are often required by 8.6.2)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Temporary Enclosures {4.3.1}: Are all panels, tarps, plastic sheeting, etc. flame retardant?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Impairments {IFC Section 1003}: <input type="checkbox"/> Have paths of egress from occupied areas been maintained? {IFC Section 1003}: <input type="checkbox"/> If fire alarm/detection systems in occupied areas have been temporarily impaired. Has the Campus Fire Prevention Program Manager approved the impairments/restrictions? {IFC Section 901}	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Fire Extinguishers {4.3.4}: <input type="checkbox"/> Are appropriate fire extinguishers readily available, with a maximum travel distance of 50 feet? <input type="checkbox"/> Have fire extinguishers been provided within temporary enclosures?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Internal Combustion Devices {4.4}: <input type="checkbox"/> Are all internal combustion devices, where required, exhausted outside, with a least 9 inches between exhaust and combustible materials? <input type="checkbox"/> Is refueling only done on cool engines?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Temporary Heating {5.2}: Is temporary heating equipment listed and being used according to the manufacturer's requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Hot Work Programs {5.1}: <input type="checkbox"/> Is there a current permit for ongoing operations? <input type="checkbox"/> Are all precautions required by the permit in place? <input type="checkbox"/> Is there a dedicated fire watch? <input type="checkbox"/> Does the fire watch extend after the completion for work (e.g., usually minimum of 30 min. in general or 2 hrs for roofs)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Waste {5.4}: Are accumulations of waste materials, dust, and debris removed at the end of each shift (or more frequently as needed)? <input type="checkbox"/> Are materials subject to spontaneous ignition (e.g., oily rags) stored in listed disposal containers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Trash Chutes {5.4}: Are trash chutes non-combustible, or provided with sprinkler protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Flammable/Combustible Liquids {5.5}: Are flammable/combustible liquids in proper containers and is there less than a total of 60 gallons inside and within 50 feet of the structure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Compressed Gases { IFC Chapter 53}: Are compressed gases properly stored and being used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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#	All bracketed references are from NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations, unless otherwise noted. This is not a completed list of requirements.	YES	NO	N/A
12	Electrical {6.1}: <input type="checkbox"/> Are extension cords rated and free from damage? <input type="checkbox"/> Do all branch circuits originate in approved power outlets or panel boards with over-current protection? <input type="checkbox"/> Are all circuits grounded?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	Lighting {6.1.3}: <input type="checkbox"/> Do all temporary lights have guards? <input type="checkbox"/> Are lights only suspended by their cords when designated to be so suspended? <input type="checkbox"/> Are they fastened securely, if necessary, to prevent ignition of combustible materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	Fire Safety Plan {7.1}: Has a fire safety plan been established and has a Fire Prevention Program Superintendent been designated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	Fire Alarms {7.4}: <input type="checkbox"/> Is there a readily available pull box for fire alarms? <input type="checkbox"/> If a telephone is used, are instructions clearly posted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	Command Post/Evac Area {7.5} <input type="checkbox"/> Is there a designated command post provided with plans, emergency info., keys, communication, and other equipment as needed? <input type="checkbox"/> Is there a clear post-evacuation muster location?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	Fire Access {7.5}: <input type="checkbox"/> Are pre-approved fire department access routes being maintained? <input type="checkbox"/> Is there clear access to hydrants, standpipe and fire department connections?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	Standpipes {7.6, 8.7.4}: Are standpipes ready for use, and remain within one floor of the top level during construction/demolition?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19	Egress {7.8}: Is the means of egress acceptable (e.g. properly marked, clear, safe, lighted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20	Sprinkler {8.7.3}: <input type="checkbox"/> Is the sprinkler in place as soon as practicable following construction? <input type="checkbox"/> Are sprinkler valves checked at the end of each shift?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21	Fire Cutoffs {8.6.1}: <input type="checkbox"/> Are fire walls and exit stairwells, where required for the completed building, given construction priority for installation? <input type="checkbox"/> Are fire doors installed as soon as practicable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22	Stairs {7.5.6}: Is a stairwell provided for the building? <input type="checkbox"/> Is the stairwell extended upward as each floor is installed in new construction and maintained for each floor still remaining in demolition? <input type="checkbox"/> Is it lighted? <input type="checkbox"/> Is it enclosed when the building exterior walls are in place? <input type="checkbox"/> Is signage provided indicating floor level, stair designation, and exit path directions? <input type="checkbox"/> Are extinguishers provided at each floor?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23	Impairments to fire protection systems or fire alarm, detection or communication systems {7.2.4.6}: <input type="checkbox"/> Are temporary impairments of all fire protection devices and alarm/detection systems immediately removed upon completion of work in the area and at the end of each shift? <input type="checkbox"/> Is there an impairment coordinator?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Number of Violations:				

Notes:

Completed Report Submission Information:

Distribution: Contractor, Campus, CEO, Project File

Submitted to:

Submission Date:

Reviewer:

Date of Review:

Statement of Special Inspections

**THERE ARE NO SPECIAL INSPECTIONS
REQUIRED AT THIS BUILDING.**

SUCF Project No: 081058-00

Project Title: UPGRADE ELEVATORS CAMPUS WIDE AT SUNY NEW PALTZ
AT COYKENDALL SCIENCE BUILDING

Registered Design Professionals in Responsible Charge:

Architect: (Name) (Address)
MDSZERBATY ASSOCIATES ARCHITECTURE
307 SEVENTH AVENUE, SUITE 1501, NEW YORK, NY 10001

Structural Engineer: _____

Mechanical Engineer: IAQ SYSTEMS INC CONSULTING ENGINEERS
555 EIGHTH AVENUE, SUITE 1502, NEW YORK, NY 10018

- ✓ Identification of Seismic-Force Resisting Systems and Wind-Force-Resisting Systems
- ✓ Required Special Inspections and Frequencies
- ✓ Special Inspector Minimum Qualifications
- ✓ Contractor's Statement of Responsibility Form
- ✓ Fabricator's Certificate of Compliance Form (*only needed if there are fabricated items*)
- ✓ Special Inspector / Approved Agency Final Report

As the Registered Design Professional(s) in Responsible Charge for this project, I/we certify this Statement of Special Inspections includes a complete list of materials and work that require special inspection and testing and the minimum qualifications of the Special Inspectors / testing agencies required to be considered for conducting the inspections and testing. This represents the complete extent of special inspections and testing required during the construction of this project and complies with the NYS 2017 Uniform Fire Prevention and Building Code.



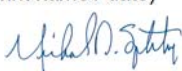
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(Affix professional seal)

Arch.: MICHAEL D. SZERBATY Str. Eng.: _____
(Print name / date) (Print name / date)

Mech. Eng.: SAI BARADE
(Print name / date)



(Signature)

(Signature)

(Signature)

Identification of Seismic-Force-Resisting Systems and Wind-Force-Resisting Systems

➤ **Seismic-Force-Resisting Systems:**

The Seismic Design Category (SDC) is Choose an item

There Choose an item seismic-force-resisting systems in this project.

There Choose an item designated seismic systems.

Additional Items for Seismic Design Categories B, C, D or F:

- ☐ Isolator units and energy dissipation devices.

Additional Items for Seismic Design Categories C, D, E or F:

- ☐ HVAC ducts designed to carry hazardous materials.
- ☐ Piping / mechanical units designed to carry hazardous materials.
- ☐ Electrical equipment used for emergency or standby power systems.
- ☐ Vibration isolation systems requiring 1/4" max between equipment support frames and restraint.

Additional items for Seismic Design Categories D, E or F:

- ☐ Exterior cladding, interior or exterior non-bearing walls >30 ft above grade or walking surfaces.
- ☐ Exterior cladding, interior or exterior non-bearing walls weighing >5 psf.
- ☐ Interior non-bearing walls weighing >15 psf.
- ☐ Access floors.
- ☐ Steel storage racks taller than 8 feet.
- ☐ Code-formed steel special bolted moment frames.

Additional items for Seismic Design Categories E or F:

- ☐ Electrical equipment.

➤ **Wind-Force-Resisting Systems:**

☐ Wind Category B, wind speed minimum 120 MPH.

☐ Wind Category C or D, wind speed minimum 110 MPH.

Design includes wind-force-resisting systems and components:

- ☐ Roof covering, roof deck and roof framing connections.
- ☐ Exterior wall covering and wall connections to roof and floor diaphragms and framing.
- ☐ Cold-formed steel light-frame construction
- ☐ Structural wood

Required Special Inspections, Tests, Frequencies

<input type="checkbox"/>	STEEL CONSTRUCTION: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Minimum inspections prior to welding.	X		AISC 360 Table N5.4-1	1705.2.1
<input type="checkbox"/>	Minimum inspections during welding.	X		AISC 360 Table N5.4-2	
<input type="checkbox"/>	Minimum inspections after welding.		X	AISC 360 Table N5.4-3	
<input type="checkbox"/>	UT shall be performed on CJP groove welds subject to transversely applied tension loading in butt, T-, and Corner joints. a. For Risk Category III or IV structures b. For Risk Category II structures		X 100% X 10%	AISC 360 N5.5b	
<input type="checkbox"/>	Minimum inspections prior to high-strength bolting (except for snug-tight joints).	X		AISC 360 Table N5.6-1	
<input type="checkbox"/>	Minimum inspections during high-strength bolting (except for snug-tight joints). For pretension/slip-critical joints: a. Turn-of-nut with match marking, direct-tension-indicator method, twist-off-type tension control bolt method. b. Calibrated wrench method, turn-of-nut method without matchmaking.	X	X	AISC 360 Table N5.6-2	
<input type="checkbox"/>	Minimum inspections after high-strength bolting.		X	AISC 360 Table N5.6-3	
<input type="checkbox"/>	Inspect fabricated or erected steel as appropriate to verify compliance with the construction drawings. Inspect braces, stiffeners, member locations, and joint details.		X	AISC 360 N5.7	
<input type="checkbox"/>	Inspect during placement of anchor rods and other embedments supporting structural steel for compliance with the construction dwgs.	X		AISC 360 N5.7	
<input type="checkbox"/>	Inspect welding of steel headed stud anchors.	X		AISC 360 N6 AWS D1.1/D1.1M	
<input type="checkbox"/>	Verification for metal deck: a. Welding consumables, welding procedure specs, welder's qualifications prior to work, observation of work in progress, and visual inspection of all welds. b. Fasteners to be used prior to work, observation of work in progress to confirm conformance to manufacturer's recommendations, and visual inspection of completed installation.	X X		AISC 360 N6	

<input type="checkbox"/>	COLD-FORMED STEEL DECK: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Deck Placement		X	SDI QA/QC Table 1.1	1705.2.2
<input type="checkbox"/>	Inspection or Execution Tasks After to Deck Placement		X	SDI QA/QC Table 1.2	
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Welding		X	SDI QA/QC Table 1.3	
<input type="checkbox"/>	Inspection or Execution Tasks During Welding	X		SDI QA/QC Table 1.4	
<input type="checkbox"/>	Inspection or Execution Tasks After to Welding		X	SDI QA/QC Table 1.5	
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Mechanical Fastening		X	SDI QA/QC Table 1.6	
<input type="checkbox"/>	Inspection or Execution Tasks During to Mechanical Fastening	X		SDI QA/QC Table 1.7	
<input type="checkbox"/>	Inspection or Execution Tasks After to Mechanical Fastening		X	SDI QA/QC Table 1.8	

<input type="checkbox"/>	OPEN-WEB STEEL JOISTS AND /OR JOIST GIRDERS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
	Installation of open-web steel joists and joist girders.				Table 1705.2.3
<input type="checkbox"/>	End connections – welding or bolted	-	X	SJI CJ,SJI K SJI LH/DLH OR SJI JG	
<input type="checkbox"/>	Bridging – horizontal or diagonal a. Standard bridging b. Bridging that differs from the SJI specifications.	-	X	SJI CJ,SJI K SJI LH/DLH OR SJI JG	

<input type="checkbox"/>	COLD-FORMED STEEL TRUSSES SPANNING 60 FT OR GREATER: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify the temporary installation of restraint / bracing is installed per the approved truss submittal package.		X		1705.2.4
<input type="checkbox"/>	Verify the permanent individual truss member restraint / racing is installed per the approved truss submittal package.		X		

<input type="checkbox"/>	CONCRETE CONSTRUCTION: Special Inspection and Testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect reinforcement, including restressing tendons, and verify placement.	-	X	ACI 318 Ch. 20, 25.2, 25.3, 26.5.1- 26.5.3	1908.4
<input type="checkbox"/>	Reinforcing bar welding: a. Verify weldability of reinforcing bars other than ASTM A706; b. Inspect single-pass fillet welds, maximum 5/16"; and c. Inspect all other welds	X	X X	AWS D1.4 ACI 318:26.5.4	
<input type="checkbox"/>	Inspect anchors cast in concrete.	-	X	ACI 318:17.8.2	-
<input type="checkbox"/>	Inspect anchors post-installed in hardened concrete members. a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads. b. Mechanical and adhesive anchors not defined in 4.a.	X	X	ACI 318: 7.8.2.4 ACI 318: 17.8.2	Table 1705.3 footnote 'b'.
<input type="checkbox"/>	Verify use of required design mix.	-	X	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
<input type="checkbox"/>	Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	-	ASTM C172 ASTM C31 ACI 318: 26.4.5,26.12	1908.10
<input type="checkbox"/>	Inspect concrete and shotcrete placement for proper application techniques.	X	-	ACI 318: 26.4.5	1908.6, .7, and .8
<input type="checkbox"/>	Verify maintenance of specified curing temperature and techniques.	-	X	ACI 318: 26.4.7- 26.4.9	1908.9
<input type="checkbox"/>	Inspect pre-stressed concrete for: a. Application of pre-stressing forces; and b. Grouting of bonded pre-stressing tendons	X X	- -	ACI 318: 6.9.2.1 ACI 318: 6.9.2.3	
<input type="checkbox"/>	Inspect erection of precast concrete members.	-	X	ACI 318: 6.8	-
<input type="checkbox"/>	Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	-	X	ACI 318: 26.10.2	-
<input type="checkbox"/>	Inspect formwork for shape, location and dimensions of the concrete member being formed.	-	X	ACI 318: 26.10.1(b)	-

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level A – For Risk Category I, II, or III, designed using Prescriptive or Empirical design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify certificates of compliance prior to construction.		X	TMS 402, TMS 602 Table 3.1.1	1705.4

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level B – For Risk Category I, II, or III, designed using Engineered design methods, or Risk Category IV designed using Prescriptive design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verification of Slump flow and Visual Stability Index (VSI) as delivered to the project site in accordance with Specification Article 1.5 B.1.b.3 for self-consolidating grout.	X	X	TMS 402 Table 3.1.2	1705.4
<input type="checkbox"/>	Verification of f'_m and f'_{AAC} in accordance with Specification Article 1.4B prior to construction, except where specifically exempted by TMS 402.		X	TMS 402 Table 3.1.2	
<input type="checkbox"/>	Verify compliance with the approved submittals.		X	TMS 602 Art 1.5	
<input type="checkbox"/>	As masonry construction begins, verify the following are in compliance:				
<input type="checkbox"/>	Proportions of site-prepared mortar		X	TMS 602 Art 2.1, 2.6A	
<input type="checkbox"/>	Construction of mortar joints		X	TMS 602 Art 3.3B	
<input type="checkbox"/>	Grade and size of prestressing tendons and anchorages		X	TMS 602 Art 2.4B, 2.4H	
<input type="checkbox"/>	Location of reinforcement, connectors and prestressing tendons and anchorages		X	TMS 602 Art 3.4, 3.6A	
<input type="checkbox"/>	Prestressing technique		X	TMS 602 Art 3.6B	
<input type="checkbox"/>	Properties of thin-set mortar for AAC masonry	X	X	TMS 602 Art 2.1C	
<input type="checkbox"/>	Prior to grouting, verify that the following are in compliance:				
<input type="checkbox"/>	Grout space		X	TMS 602 Art 3.2D, 3.2F	
<input type="checkbox"/>	Grade, type and size of reinforcement and anchor bolts, and prestressing tendons and anchorages		X	TMS 402 Sec 6.1 TMS 602 Art 2.4, 3.4	
<input type="checkbox"/>	Placement of reinforcements, connectors and prestressing tendons and anchorages		X	TMS 402 Sec 6.1, 6.2.1, 6.2.6, 6.2.7 TMS 602 Art 3.2E, 3.4, 3.6A	
<input type="checkbox"/>	Proportions of site-prepared grout and prestressing grout for bonded tendon		X	TMS 602 Art 2.6B, 2.4G.1.b	
<input type="checkbox"/>	Construction of mortar joints.		X	TMS 602 Art 3.3B	

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level C – For Risk Category IV designed using Engineered design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verification of f_m and f_{AAC} in accordance with Specification Article 1.4B prior to construction and for every 5,000 sq. ft. during construction.	X	X	TMS 402 Table 3.1.3	1705.4
<input type="checkbox"/>	Verification of proportions of materials in premixed or preblended mortar prestressing grout, and grout other than self-consolidating grout, as delivered to the project site.	X	X	TMS 402 Table 3.1.3	
<input type="checkbox"/>	Verification of Slump flow and Visual Stability Index (VSI) as delivered to the project site in accordance with Specification Article 1.5 B.1.b.3 for self-consolidating grout.	X	X	TMS 402 Table 3.1.3	
<input type="checkbox"/>	Verify compliance with the approved submittals.		X	TMS 602 Art 1.5	
<input type="checkbox"/>	Verify that the following are in compliance:				
<input type="checkbox"/>	Proportions of site-mixed mortar, grout and prestressing grout for bonded tendons.		X	TMS 602 Art 2.1, 2.6A, 2.6B, 2.6C, 2.4G.1.b	
<input type="checkbox"/>	Grade, type, and size of reinforcement and anchor bolts, and prestressing tendons and anchorages		X	TMS 402 Sec 6.1, TMS 602 Art 2.4, 3.4	
<input type="checkbox"/>	Placement of masonry units and construction of mortar joints.		X	TMS 602 Art 3.3B	
<input type="checkbox"/>	Placement of reinforcement, connectors and prestressing tendons and anchorages	X		TMS 402 Sec 6.1, 6.2.1, 6.2.6, 6.2.7 TMS 602 Art 3.2E, 3.4, 3.6A	
<input type="checkbox"/>	Grout space prior to grouting	X		TMS 602 Art 3.2D, 3.2F	
<input type="checkbox"/>	Placement of grout and prestressing grout for bonding tendons.	X		TMS 602 Art 3.5, 3.6C	
<input type="checkbox"/>	Size and location of structural elements		X	TMS 602 Art 3.3F	
<input type="checkbox"/>	Type, size and location of anchors including other details of anchorage of masonry to structural members, frames or other construction.	X		TMS 402 Sec 1.2.1(e), 6.1.4.3, 6.2.1	
<input type="checkbox"/>	Welding of reinforcement	X		TMS 402 Sec 8.1.6.7.2, 9.3.3.4(c), 11.3.3.4(b)	
<input type="checkbox"/>	Preparation, construction and protection of masonry during code weather (temperature below 40 degrees F) or hot weather (temperature above 90 degrees F)		X	TMS 602 Art 1.8C, 1.8D	
<input type="checkbox"/>	Application and measurement of prestressing force	X		TMS 602 Art 3.6B	
<input type="checkbox"/>	Placement of AAC masonry units and construction of thin-bed mortar joints	X		TMS 602 Art 3.3B.9, 3.3F.1.b	
<input type="checkbox"/>	Properties of thin-bed mortar for AAC masonry	X		TMS 602 Art 2.1 C.1	
<input type="checkbox"/>	Observe preparation of grout specimens, mortar specimens and / or prisms.	X		TMS 602 Art 1.4B.2.a.3, 1.4B.2.b.3, 1.4B.2.c.3, 1.4B.3, 1.4B.4	

<input type="checkbox"/>	WOOD CONSTRUCTION: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect high-load diaphragms for grade/thickness of sheathing, nominal size of members, fastener size, number and spacing.		X	Contr. docs	1705.5.1, 2306.2
<input type="checkbox"/>	Metal-plate-connected wood trusses spanning 60 feet or greater: temporary installation restraint / bracing and permanent individual truss member restraint / bracing.		X	App. truss submittal package	1705.5.2

<input type="checkbox"/>	SOILS: Special Inspection and Testing are required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	-	X	Geotech Report, Contract Docs	Table 1705.6
<input type="checkbox"/>	Verify excavations are extended to proper depth and have reached proper material.	-	X		
<input type="checkbox"/>	Perform classification and testing of compacted fill materials.				
<input type="checkbox"/>	Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	X	-		
<input type="checkbox"/>	Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.	-	X		
<input type="checkbox"/>	During fill placement inspector shall verify that proper materials and procedures.	X			

<input type="checkbox"/>	DRIVEN DEEP FOUNDATION ELEMENTS: Special Inspection and Testing are required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify element materials, sizes and lengths comply with the requirements.	X	-	Geotech Report, Contract Docs	Table 1705.7
<input type="checkbox"/>	Determine capacities of test elements and conduct additional load tests, as required.	X	-		
<input type="checkbox"/>	Inspect driving operations and maintain complete and accurate records for each element.	X	-		
<input type="checkbox"/>	Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element.	X	-		
<input type="checkbox"/>	For steel elements, perform additional special inspections in accordance with Section 1705.2. (See Special Inspections for Concrete Construction.)	-	-		
<input type="checkbox"/>	For concrete elements and concrete-filled elements, perform tests and additional special inspections in accordance with Section 1705.3. (See Special Inspections for Concrete Construction)	-	-		
<input type="checkbox"/>	If applicable, RDP to identify: specialty elements, additional insp.	-	-		

<input type="checkbox"/>	CAST-IN-PLACE DEEP FOUNDATION ELEMENTS: Special Inspection and Testing is required.				
	Type	Continu- ous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect drilling operations and maintain complete and accurate records for each element.	X	-	Geotech Report, Contract Docs	Table 1705.8
<input type="checkbox"/>	Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end-bearing strata capacity. Record concrete or grout volumes.	X	-		
<input type="checkbox"/>	For concrete elements, perform tests and additional special inspections in accordance with Section 1705.3. (See Special Inspections for Concrete Construction)	-	-		

<input type="checkbox"/>	HELICAL PILE FOUNDATIONS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Installation equipment used, pile dimensions, tip elevations, final depth, final installation torque [and any other information required by the RDP] shall be recorded.	X		Geotech Rept, Contr. Docs	1705.9

<input type="checkbox"/>	SPRAYED FIRE-RESISTANT MATERIALS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify surface preparation in accordance with manufacturer's written instructions				1705.14.2
<input type="checkbox"/>	Verify temperature and area ventilation before and after application in accordance with manufacturer's written instructions.				1705.14.3
<input type="checkbox"/>	Verify thickness of sprayed fire resistant materials. a. Minimum of 4 measurements per 1,000 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E605	1705.14.4
<input type="checkbox"/>	b. Minimum of 25% of structural members at each story.				
<input type="checkbox"/>	Verify density of sprayed fire resistant materials. a. Minimum of one sample per 2,500 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E605	1705.14.5
<input type="checkbox"/>	b. Minimum of one sample from each type of structural framing member per 2,500 SF of floor area or part thereof at each story				
<input type="checkbox"/>	Verify cohesive/adhesive bond strength of sprayed fire resistant materials. a. Minimum of one sample per 2,500 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E736	1705.14.6
<input type="checkbox"/>	b. Minimum of one sample from each type of structural framing member per 2,500 SF of floor area or part thereof at each story				
<input type="checkbox"/>	c. Bond tests to qualify a primer, paint, or encapsulant when acceptable bond strength performance between these coatings and the fire resistant material has not been determined.				
<input type="checkbox"/>	Condition of finished application.				1705.14.1

<input type="checkbox"/>	MASTIC AND INTUMESCENT FIRE-RESISTANT COATINGS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify surface preparation, application, and thickness in accordance with manufacturer's written instructions when applied to structural elements and decks.			AWCI 12-B	1705.15

<input type="checkbox"/>	EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS): Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Water-resistive barrier coatings must be inspected when installed over a sheathing substrate.			ASTM E2570	1705.16.1
<input type="checkbox"/>	EIFS applications not over a water-resistive barrier, masonry, or concrete.				1705.16

<input checked="" type="checkbox"/>	FIRE-RESISTANT PENETRATIONS AND JOINTS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input checked="" type="checkbox"/>	For high-rise buildings or Risk Category III or IV buildings inspect through-penetrations and membrane penetration firestops.			ASTM E2174, ASTM E814, UL 1479	1705.17, 714.3.1.2 714.4.2
<input checked="" type="checkbox"/>	For high-rise buildings or Risk Category III or IV buildings inspect fire-resistant joint systems and perimeter fire barrier systems.			ASTM: E119, E2393, E1966, E2307, UL 2079	1705.17, 715.3, 715.4

<input type="checkbox"/>	SMOKE CONTROL SYSTEM: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Smoke control systems are to be tested during erection of ductwork and prior to concealment for leakage testing and recording of device location.		X		1705.18.1
<input type="checkbox"/>	Smoke control systems are to be tested prior to occupancy and after sufficient completion of pressure difference testing, flow measurements and detection and control verification.		X		

<input type="checkbox"/>	FABRICATED ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	The RDP shall identify any structural, load-bearing or lateral load-resisting members or assemblies that are specified to be fabricated off site i.e. in a fabricator's shop. Special inspections shall be required for these items unless: a. The fabricator maintains approved detailed fabrication and quality control procedures that provide conformance to the approved construction documents and IBC 2015. b. The fabricator is registered and approved per 1704.2.5.1. See also the Fabricator Form in this packet for these items.				1704.2.5
<input type="checkbox"/>	If the members or assemblies are to be fabricated on site, refer to their respective categories.				

<input type="checkbox"/>	WIND-FORCE-RESISTANT ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Structural wood	X	X		1705.11.1
<input type="checkbox"/>	Cold-formed steel light-frame construction		X		1705.11.2
<input type="checkbox"/>	Components: Roof covering, roof deck and roof framing connections		X		1705.11.3
<input type="checkbox"/>	Components: Exterior wall covering and wall connections to roof and floor diaphragms and framing.		X		1705.11.3

<input type="checkbox"/>	SEISMIC-FORCE RESISTANT ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Structural steel			AISC 341	1705.12.1.1 1705.13.1.1 1705.13.1.3
<input type="checkbox"/>	Structural steel elements			AISC 341	1705.12.1.2 1905.13.1.2
<input type="checkbox"/>	Structural wood	X	X		1705.12.2
<input type="checkbox"/>	Cold-formed steel light-frame construction				1705.12.3
<input type="checkbox"/>	Designated seismic systems			ASCE 7: 13.2.2	1705.12.4, 1705.13.4
<input type="checkbox"/>	Arch. components: Ext.cladding, interior or exterior nonbearing walls and interior or ext veneer 30 ft or less above grade or walking surface.		X		1705.12.5
<input type="checkbox"/>	Arch. components: Exterior cladding or interior or exterior veneer weighing 5 psf or less.		X		1705.12.5
<input type="checkbox"/>	Arch. components: Interior nonbearing walls weighing 15 psf or less.		X		1705.12.5
<input type="checkbox"/>	Architectural components: Access floors		X		1705.12.5.1
<input type="checkbox"/>	Elect. Equip. anchorage for emergency and standby power systems		X		1705.12.6
<input type="checkbox"/>	Other electrical equipment anchorage		X		1705.12.6
<input type="checkbox"/>	Piping systems / mechanical units designed to carry hazardous materials: installation and anchorage		X		1705.12.6
<input type="checkbox"/>	Ductwork designed to carry hazardous materials: installation and anchorage		X		1705.12.6
<input type="checkbox"/>	Vibration isolation systems: installation and anchorage		X		1705.12.6

<input type="checkbox"/>	SPECIAL CASES: Special Inspection is required. (1705.1.1)				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Construction materials and systems that are alternatives to materials and systems prescribed by code, not addressed in other sections. [Note to RDP: you must identify specifically what is to be inspected.]				1705.1.1
<input type="checkbox"/>	Unusual design applications of materials described in the code. [Note to RDP: you must identify specifically what is to be inspected.]				
<input type="checkbox"/>	Materials and systems required to be installed per additional manufacturer's instructions that prescribe requirements not contained in the code or in referenced standards. [Note to RDP: you must identify specifically]				

Category	Special Inspector Minimum Qualifications
<input type="checkbox"/> Reinforced Concrete	<input type="checkbox"/> Current ICC Reinforced Concrete Special Inspector or ACI Concrete Constr. Inspector <input type="checkbox"/> Concrete field testing by an ACI Concrete Field Testing Technical w/ Grade 1 cert. <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> NYS Registered Design Professional Engineer (RDP) with relevant experience
<input type="checkbox"/> Pre-Stressed Concrete	<u>Pretension Tendons</u> <input type="checkbox"/> Current ICC Reinforced Concrete certification and ACI Concrete Field Testing Technician with Grade 1 certification plus one year relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience <u>Post-tension Tendons</u> <input type="checkbox"/> Current Post-Tensioning Institute (PTI) certification <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Welding	<input type="checkbox"/> Current AWS Certified Welding Inspector <input type="checkbox"/> Current ICC Structural Steel and Welding Certificate plus one year of relevant experience <input type="checkbox"/> Current Level II cert. from American Society for Non-Destructive Testing (NDT) <input type="checkbox"/> Current NDT Level III provided previously certified as NDT Level II
<input type="checkbox"/> High-Strength Bolting & Steel Frame Inspection	<input type="checkbox"/> Current ICC Structural Steel and Welding certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Masonry	<input type="checkbox"/> Current ICC Structural Masonry certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Sprayed Fire-Resistant Materials	<input type="checkbox"/> Current ICC Spray-Applied Fireproofing certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Excavation and filling; verification of soils; piling & drilled piers; modular retaining walls	<input type="checkbox"/> Current Level II certification in geotechnical engineering technology/construction from the National Institute for Certification in Engineering Technologies (NICET) <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Inspection of Fabricators	<input type="checkbox"/> Precast: Current ICC Reinforced Concrete certification plus one year relevant exp <input type="checkbox"/> Bar Joist: see welding requirements <input type="checkbox"/> Metal Building: see welding requirements <input type="checkbox"/> Structural Steel: see welding requirements
<input type="checkbox"/> Seismic Items not addressed elsewhere	<input type="checkbox"/> Qualified person with one year of relevant experience <input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience
<input type="checkbox"/> Exterior Insulation and Finish System	<input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience
<input type="checkbox"/> Smoke Control	<input type="checkbox"/> Expertise in fire protection engineering, mechanical engineering and certified as an air balancer <input type="checkbox"/> The RDP responsible for design
<input type="checkbox"/> Fire-Resistant Penetrations & Joints, Special Cases	<input type="checkbox"/> Qualified person with one year of relevant experience <input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience

Contractor's Statement of Responsibility Form

SUCF Project No: _____

Project Title: _____

Contractor: _____

Contractor's Acknowledgement of Special Requirements

I hereby acknowledge that I have received, read and understand there are special requirements contained in the contract documents. I hereby acknowledge control will be exercised to obtain conformance with the contract documents.

As the Contractor, I will coordinate with the Special Inspector(s) in order to accommodate all inspections and tests as required. I will integrate all inspection activities as provided by the Special Inspector into the Project Schedule.

☐ **I understand if this box is checked, this project includes the construction of a seismic-force-resisting system and / or a wind-force-resisting system as noted on page 2 of the Statement of Special Inspections.**

(Print name / Signature / date)

Fabricator's Certificate of Compliance Form

SUCF Project No: _____

Project Title: _____

Contractor: _____

Fabricator: _____

Fabricated Item: *Structural, load-bearing or lateral load-resisting members of assemblies consisting of materials assembled prior to installation in a building or structure, or subject to operations such as heat treatment, thermal cutting, cold working or reforming after manufacture and prior to installation in a building or structure. Materials produced in accordance with standards referenced by this code, such as rolled structural steel shapes, steel reinforcing bars, masonry units and wood structural panels, or in accordance with a referenced standard that provides requirements for quality control done under the supervision of a third-party quality control agency, are not "fabricated items".*

In lieu of special inspections during fabrication, a fabricator shall provide with the initial shop drawings for consideration:

- The fabricator's written procedural and quality control manuals AND
- Documentation from the most recent audit of fabrication practices.

Date of Last Audit: _____

Company that conducted the Audit:

Contact Person: _____

Name: _____

Address: _____

For ease in evaluation, the Fabricator may attach copies of a Fabricator's Certification or a copy of the latest building code evaluation service report, if applicable.

Date of most recent Approval: _____ **Certification Number:** _____

Certificate issued by: Name: _____ Address: _____

Contact Person: _____

.....
Post Fabrication Certification:

Provide a description of the structural, load bearing or lateral load-resisting assemblies that have been fabricated:

I hereby certify the items described above were fabricated in strict accordance with the approved contract documents.

(Print Name / Signature)

(Print title)

Special Inspector / Approved Agency Final Report

SUCF Project No: _____

Project Title: _____

Contractor: _____

Special Inspector / Approved Agency: _____

We have completed the specified inspections and testing as identified in the Statement of Special Inspections dated _____. To the best of my information, knowledge and belief, the inspections we have completed have been performed and all discovered discrepancies have been reported to the Registered Design Professional in Responsible Charge.

All interim reports submitted prior to this Final Report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,

(Signature / date)

(Seal or Certification)

(Print name)

(Print title)

Statement of Special Inspections

SUCF Project No: 081058-00

Project Title: UPGRADE ELEVATORS CAMPUS WIDE AT SUNY NEW PALTZ
AT HAGGERTY ADMINISTRATION BUILDING

Registered Design Professionals in Responsible Charge:

Architect: (Name) (Address)
MDSZERBATY ASSOCIATES ARCHITECTURE
307 SEVENTH AVENUE, SUITE 1501, NEW YORK, NY 10001

Structural Engineer: _____

Mechanical Engineer: IAQ SYSTEMS INC CONSULTING ENGINEERS
555 EIGHTH AVENUE, SUITE 1502, NEW YORK, NY 10018

- ✓ Identification of Seismic-Force Resisting Systems and Wind-Force-Resisting Systems
- ✓ Required Special Inspections and Frequencies
- ✓ Special Inspector Minimum Qualifications
- ✓ Contractor's Statement of Responsibility Form
- ✓ Fabricator's Certificate of Compliance Form (*only needed if there are fabricated items*)
- ✓ Special Inspector / Approved Agency Final Report

As the Registered Design Professional(s) in Responsible Charge for this project, I/we certify this Statement of Special Inspections includes a complete list of materials and work that require special inspection and testing and the minimum qualifications of the Special Inspectors / testing agencies required to be considered for conducting the inspections and testing. This represents the complete extent of special inspections and testing required during the construction of this project and complies with the NYS 2017 Uniform Fire Prevention and Building Code.



(Affix professional seal)

(Affix professional seal)

(Affix professional seal)

Arch.: MICHAEL D. SZERBATY Str. Eng.: _____ Mech. Eng.: SAI BARADE
(Print name / date) (Print name / date) (Print name / date)



(Signature)

(Signature)

(Signature)

Identification of Seismic-Force-Resisting Systems and Wind-Force-Resisting Systems

➤ **Seismic-Force-Resisting Systems:**

The Seismic Design Category (SDC) is Choose an item

There Choose an item seismic-force-resisting systems in this project.

There Choose an item designated seismic systems.

Additional Items for Seismic Design Categories B, C, D or F:

- ☐ Isolator units and energy dissipation devices.

Additional Items for Seismic Design Categories C, D, E or F:

- ☐ HVAC ducts designed to carry hazardous materials.
- ☐ Piping / mechanical units designed to carry hazardous materials.
- ☐ Electrical equipment used for emergency or standby power systems.
- ☐ Vibration isolation systems requiring 1/4" max between equipment support frames and restraint.

Additional items for Seismic Design Categories D, E or F:

- ☐ Exterior cladding, interior or exterior non-bearing walls >30 ft above grade or walking surfaces.
- ☐ Exterior cladding, interior or exterior non-bearing walls weighing >5 psf.
- ☐ Interior non-bearing walls weighing >15 psf.
- ☐ Access floors.
- ☐ Steel storage racks taller than 8 feet.
- ☐ Code-formed steel special bolted moment frames.

Additional items for Seismic Design Categories E or F:

- ☐ Electrical equipment.

➤ **Wind-Force-Resisting Systems:**

☐ Wind Category B, wind speed minimum 120 MPH.

☐ Wind Category C or D, wind speed minimum 110 MPH.

Design includes wind-force-resisting systems and components:

- ☐ Roof covering, roof deck and roof framing connections.
- ☐ Exterior wall covering and wall connections to roof and floor diaphragms and framing.
- ☐ Cold-formed steel light-frame construction
- ☐ Structural wood

Required Special Inspections, Tests, Frequencies

<input type="checkbox"/>	STEEL CONSTRUCTION: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Minimum inspections prior to welding.	X		AISC 360 Table N5.4-1	1705.2.1
<input type="checkbox"/>	Minimum inspections during welding.	X		AISC 360 Table N5.4-2	
<input type="checkbox"/>	Minimum inspections after welding.		X	AISC 360 Table N5.4-3	
<input type="checkbox"/>	UT shall be performed on CJP groove welds subject to transversely applied tension loading in butt, T-, and Corner joints. a. For Risk Category III or IV structures b. For Risk Category II structures		X 100% X 10%	AISC 360 N5.5b	
<input type="checkbox"/>	Minimum inspections prior to high-strength bolting (except for snug-tight joints).	X		AISC 360 Table N5.6-1	
<input type="checkbox"/>	Minimum inspections during high-strength bolting (except for snug-tight joints). For pretension/slip-critical joints: a. Turn-of-nut with match marking, direct-tension-indicator method, twist-off-type tension control bolt method. b. Calibrated wrench method, turn-of-nut method without matchmaking.	X	X	AISC 360 Table N5.6-2	
<input type="checkbox"/>	Minimum inspections after high-strength bolting.		X	AISC 360 Table N5.6-3	
<input type="checkbox"/>	Inspect fabricated or erected steel as appropriate to verify compliance with the construction drawings. Inspect braces, stiffeners, member locations, and joint details.		X	AISC 360 N5.7	
<input type="checkbox"/>	Inspect during placement of anchor rods and other embedments supporting structural steel for compliance with the construction dwgs.	X		AISC 360 N5.7	
<input type="checkbox"/>	Inspect welding of steel headed stud anchors.	X		AISC 360 N6 AWS D1.1/D1.1M	
<input type="checkbox"/>	Verification for metal deck: a. Welding consumables, welding procedure specs, welder's qualifications prior to work, observation of work in progress, and visual inspection of all welds. b. Fasteners to be used prior to work, observation of work in progress to confirm conformance to manufacturer's recommendations, and visual inspection of completed installation.	X X		AISC 360 N6	

<input type="checkbox"/>	COLD-FORMED STEEL DECK: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Deck Placement		X	SDI QA/QC Table 1.1	1705.2.2
<input type="checkbox"/>	Inspection or Execution Tasks After to Deck Placement		X	SDI QA/QC Table 1.2	
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Welding		X	SDI QA/QC Table 1.3	
<input type="checkbox"/>	Inspection or Execution Tasks During Welding	X		SDI QA/QC Table 1.4	
<input type="checkbox"/>	Inspection or Execution Tasks After to Welding		X	SDI QA/QC Table 1.5	
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Mechanical Fastening		X	SDI QA/QC Table 1.6	
<input type="checkbox"/>	Inspection or Execution Tasks During to Mechanical Fastening	X		SDI QA/QC Table 1.7	
<input type="checkbox"/>	Inspection or Execution Tasks After to Mechanical Fastening		X	SDI QA/QC Table 1.8	

<input type="checkbox"/>	OPEN-WEB STEEL JOISTS AND /OR JOIST GIRDERS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
	Installation of open-web steel joists and joist girders.				Table 1705.2.3
<input type="checkbox"/>	End connections – welding or bolted	-	X	SJI CJ,SJI K SJI LH/DLH OR SJI JG	
<input type="checkbox"/>	Bridging – horizontal or diagonal a. Standard bridging b. Bridging that differs from the SJI specifications.	-	X	SJI CJ,SJI K SJI LH/DLH OR SJI JG	

<input type="checkbox"/>	COLD-FORMED STEEL TRUSSES SPANNING 60 FT OR GREATER: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify the temporary installation of restraint / bracing is installed per the approved truss submittal package.		X		1705.2.4
<input type="checkbox"/>	Verify the permanent individual truss member restraint / racing is installed per the approved truss submittal package.		X		

<input type="checkbox"/>	CONCRETE CONSTRUCTION: Special Inspection and Testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect reinforcement, including restressing tendons, and verify placement.	-	X	ACI 318 Ch. 20, 25.2, 25.3, 26.5.1- 26.5.3	1908.4
<input type="checkbox"/>	Reinforcing bar welding: a. Verify weldability of reinforcing bars other than ASTM A706; b. Inspect single-pass fillet welds, maximum 5/16"; and c. Inspect all other welds	X	X X	AWS D1.4 ACI 318:26.5.4	
<input type="checkbox"/>	Inspect anchors cast in concrete.	-	X	ACI 318:17.8.2	-
<input type="checkbox"/>	Inspect anchors post-installed in hardened concrete members. a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads. b. Mechanical and adhesive anchors not defined in 4.a.	X	X	ACI 318: 7.8.2.4 ACI 318: 17.8.2	Table 1705.3 footnote 'b'.
<input type="checkbox"/>	Verify use of required design mix.	-	X	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
<input type="checkbox"/>	Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	-	ASTM C172 ASTM C31 ACI 318: 26.4.5,26.12	1908.10
<input type="checkbox"/>	Inspect concrete and shotcrete placement for proper application techniques.	X	-	ACI 318: 26.4.5	1908.6, .7, and .8
<input type="checkbox"/>	Verify maintenance of specified curing temperature and techniques.	-	X	ACI 318: 26.4.7- 26.4.9	1908.9
<input type="checkbox"/>	Inspect pre-stressed concrete for: a. Application of pre-stressing forces; and b. Grouting of bonded pre-stressing tendons	X X	- -	ACI 318: 6.9.2.1 ACI 318: 6.9.2.3	
<input type="checkbox"/>	Inspect erection of precast concrete members.	-	X	ACI 318: 6.8	-
<input type="checkbox"/>	Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	-	X	ACI 318: 26.10.2	-
<input type="checkbox"/>	Inspect formwork for shape, location and dimensions of the concrete member being formed.	-	X	ACI 318: 26.10.1(b)	-

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level A – For Risk Category I, II, or III, designed using Prescriptive or Empirical design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify certificates of compliance prior to construction.		X	TMS 402, TMS 602 Table 3.1.1	1705.4

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level B – For Risk Category I, II, or III, designed using Engineered design methods, or Risk Category IV designed using Prescriptive design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verification of Slump flow and Visual Stability Index (VSI) as delivered to the project site in accordance with Specification Article 1.5 B.1.b.3 for self-consolidating grout.	X	X	TMS 402 Table 3.1.2	1705.4
<input type="checkbox"/>	Verification of f'_m and f'_{AAC} in accordance with Specification Article 1.4B prior to construction, except where specifically exempted by TMS 402.		X	TMS 402 Table 3.1.2	
<input type="checkbox"/>	Verify compliance with the approved submittals.		X	TMS 602 Art 1.5	
<input type="checkbox"/>	As masonry construction begins, verify the following are in compliance:				
<input type="checkbox"/>	Proportions of site-prepared mortar		X	TMS 602 Art 2.1, 2.6A	
<input type="checkbox"/>	Construction of mortar joints		X	TMS 602 Art 3.3B	
<input type="checkbox"/>	Grade and size of prestressing tendons and anchorages		X	TMS 602 Art 2.4B, 2.4H	
<input type="checkbox"/>	Location of reinforcement, connectors and prestressing tendons and anchorages		X	TMS 602 Art 3.4, 3.6A	
<input type="checkbox"/>	Prestressing technique		X	TMS 602 Art 3.6B	
<input type="checkbox"/>	Properties of thin-set mortar for AAC masonry	X	X	TMS 602 Art 2.1C	
<input type="checkbox"/>	Prior to grouting, verify that the following are in compliance:				
<input type="checkbox"/>	Grout space		X	TMS 602 Art 3.2D, 3.2F	
<input type="checkbox"/>	Grade, type and size of reinforcement and anchor bolts, and prestressing tendons and anchorages		X	TMS 402 Sec 6.1 TMS 602 Art 2.4, 3.4	
<input type="checkbox"/>	Placement of reinforcements, connectors and prestressing tendons and anchorages		X	TMS 402 Sec 6.1, 6.2.1, 6.2.6, 6.2.7 TMS 602 Art 3.2E, 3.4, 3.6A	
<input type="checkbox"/>	Proportions of site-prepared grout and prestressing grout for bonded tendon		X	TMS 602 Art 2.6B, 2.4G.1.b	
<input type="checkbox"/>	Construction of mortar joints.		X	TMS 602 Art 3.3B	

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level C – For Risk Category IV designed using Engineered design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verification of f_m and f_{AAC} in accordance with Specification Article 1.4B prior to construction and for every 5,000 sq. ft. during construction.	X	X	TMS 402 Table 3.1.3	1705.4
<input type="checkbox"/>	Verification of proportions of materials in premixed or preblended mortar prestressing grout, and grout other than self-consolidating grout, as delivered to the project site.	X	X	TMS 402 Table 3.1.3	
<input type="checkbox"/>	Verification of Slump flow and Visual Stability Index (VSI) as delivered to the project site in accordance with Specification Article 1.5 B.1.b.3 for self-consolidating grout.	X	X	TMS 402 Table 3.1.3	
<input type="checkbox"/>	Verify compliance with the approved submittals.		X	TMS 602 Art 1.5	
<input type="checkbox"/>	Verify that the following are in compliance:				
<input type="checkbox"/>	Proportions of site-mixed mortar, grout and prestressing grout for bonded tendons.		X	TMS 602 Art 2.1, 2.6A, 2.6B, 2.6C, 2.4G.1.b	
<input type="checkbox"/>	Grade, type, and size of reinforcement and anchor bolts, and prestressing tendons and anchorages		X	TMS 402 Sec 6.1, TMS 602 Art 2.4, 3.4	
<input type="checkbox"/>	Placement of masonry units and construction of mortar joints.		X	TMS 602 Art 3.3B	
<input type="checkbox"/>	Placement of reinforcement, connectors and prestressing tendons and anchorages	X		TMS 402 Sec 6.1, 6.2.1, 6.2.6, 6.2.7 TMS 602 Art 3.2E, 3.4, 3.6A	
<input type="checkbox"/>	Grout space prior to grouting	X		TMS 602 Art 3.2D, 3.2F	
<input type="checkbox"/>	Placement of grout and prestressing grout for bonding tendons.	X		TMS 602 Art 3.5, 3.6C	
<input type="checkbox"/>	Size and location of structural elements		X	TMS 602 Art 3.3F	
<input type="checkbox"/>	Type, size and location of anchors including other details of anchorage of masonry to structural members, frames or other construction.	X		TMS 402 Sec 1.2.1(e), 6.1.4.3, 6.2.1	
<input type="checkbox"/>	Welding of reinforcement	X		TMS 402 Sec 8.1.6.7.2, 9.3.3.4(c), 11.3.3.4(b)	
<input type="checkbox"/>	Preparation, construction and protection of masonry during code weather (temperature below 40 degrees F) or hot weather (temperature above 90 degrees F)		X	TMS 602 Art 1.8C, 1.8D	
<input type="checkbox"/>	Application and measurement of prestressing force	X		TMS 602 Art 3.6B	
<input type="checkbox"/>	Placement of AAC masonry units and construction of thin-bed mortar joints	X		TMS 602 Art 3.3B.9, 3.3F.1.b	
<input type="checkbox"/>	Properties of thin-bed mortar for AAC masonry	X		TMS 602 Art 2.1 C.1	
<input type="checkbox"/>	Observe preparation of grout specimens, mortar specimens and / or prisms.	X		TMS 602 Art 1.4B.2.a.3, 1.4B.2.b.3, 1.4B.2.c.3, 1.4B.3, 1.4B.4	

<input type="checkbox"/>	WOOD CONSTRUCTION: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect high-load diaphragms for grade/thickness of sheathing, nominal size of members, fastener size, number and spacing.		X	Contr. docs	1705.5.1, 2306.2
<input type="checkbox"/>	Metal-plate-connected wood trusses spanning 60 feet or greater: temporary installation restraint / bracing and permanent individual truss member restraint / bracing.		X	App. truss submittal package	1705.5.2

<input type="checkbox"/>	SOILS: Special Inspection and Testing are required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	-	X	Geotech Report, Contract Docs	Table 1705.6
<input type="checkbox"/>	Verify excavations are extended to proper depth and have reached proper material.	-	X		
<input type="checkbox"/>	Perform classification and testing of compacted fill materials.				
<input type="checkbox"/>	Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	X	-		
<input type="checkbox"/>	Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.	-	X		
<input type="checkbox"/>	During fill placement inspector shall verify that proper materials and procedures.	X			

<input type="checkbox"/>	DRIVEN DEEP FOUNDATION ELEMENTS: Special Inspection and Testing are required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify element materials, sizes and lengths comply with the requirements.	X	-	Geotech Report, Contract Docs	Table 1705.7
<input type="checkbox"/>	Determine capacities of test elements and conduct additional load tests, as required.	X	-		
<input type="checkbox"/>	Inspect driving operations and maintain complete and accurate records for each element.	X	-		
<input type="checkbox"/>	Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element.	X	-		
<input type="checkbox"/>	For steel elements, perform additional special inspections in accordance with Section 1705.2. (See Special Inspections for Concrete Construction.)	-	-		
<input type="checkbox"/>	For concrete elements and concrete-filled elements, perform tests and additional special inspections in accordance with Section 1705.3. (See Special Inspections for Concrete Construction)	-	-		
<input type="checkbox"/>	If applicable, RDP to identify: specialty elements, additional insp.	-	-		

<input type="checkbox"/>	CAST-IN-PLACE DEEP FOUNDATION ELEMENTS: Special Inspection and Testing is required.				
	Type	Continu- ous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect drilling operations and maintain complete and accurate records for each element.	X	-	Geotech Report, Contract Docs	Table 1705.8
<input type="checkbox"/>	Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end-bearing strata capacity. Record concrete or grout volumes.	X	-		
<input type="checkbox"/>	For concrete elements, perform tests and additional special inspections in accordance with Section 1705.3. (See Special Inspections for Concrete Construction)	-	-		

<input type="checkbox"/>	HELICAL PILE FOUNDATIONS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Installation equipment used, pile dimensions, tip elevations, final depth, final installation torque [and any other information required by the RDP] shall be recorded.	X		Geotech Rept, Contr. Docs	1705.9

<input type="checkbox"/>	SPRAYED FIRE-RESISTANT MATERIALS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify surface preparation in accordance with manufacturer's written instructions				1705.14.2
<input type="checkbox"/>	Verify temperature and area ventilation before and after application in accordance with manufacturer's written instructions.				1705.14.3
<input type="checkbox"/>	Verify thickness of sprayed fire resistant materials. a. Minimum of 4 measurements per 1,000 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E605	1705.14.4
<input type="checkbox"/>	b. Minimum of 25% of structural members at each story.				
<input type="checkbox"/>	Verify density of sprayed fire resistant materials. a. Minimum of one sample per 2,500 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E605	1705.14.5
<input type="checkbox"/>	b. Minimum of one sample from each type of structural framing member per 2,500 SF of floor area or part thereof at each story				
<input type="checkbox"/>	Verify cohesive/adhesive bond strength of sprayed fire resistant materials. a. Minimum of one sample per 2,500 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E736	1705.14.6
<input type="checkbox"/>	b. Minimum of one sample from each type of structural framing member per 2,500 SF of floor area or part thereof at each story				
<input type="checkbox"/>	c. Bond tests to qualify a primer, paint, or encapsulant when acceptable bond strength performance between these coatings and the fire resistant material has not been determined.				
<input type="checkbox"/>	Condition of finished application.				1705.14.1

<input type="checkbox"/>	MASTIC AND INTUMESCENT FIRE-RESISTANT COATINGS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify surface preparation, application, and thickness in accordance with manufacturer's written instructions when applied to structural elements and decks.			AWCI 12-B	1705.15

<input type="checkbox"/>	EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS): Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Water-resistive barrier coatings must be inspected when installed over a sheathing substrate.			ASTM E2570	1705.16.1
<input type="checkbox"/>	EIFS applications not over a water-resistive barrier, masonry, or concrete.				1705.16

<input checked="" type="checkbox"/>	FIRE-RESISTANT PENETRATIONS AND JOINTS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input checked="" type="checkbox"/>	For high-rise buildings or Risk Category III or IV buildings inspect through-penetrations and membrane penetration firestops.			ASTM E2174, ASTM E814, UL 1479	1705.17, 714.3.1.2 714.4.2
<input checked="" type="checkbox"/>	For high-rise buildings or Risk Category III or IV buildings inspect fire-resistant joint systems and perimeter fire barrier systems.			ASTM: E119, E2393, E1966, E2307, UL 2079	1705.17, 715.3, 715.4

<input type="checkbox"/>	SMOKE CONTROL SYSTEM: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Smoke control systems are to be tested during erection of ductwork and prior to concealment for leakage testing and recording of device location.		X		1705.18.1
<input type="checkbox"/>	Smoke control systems are to be tested prior to occupancy and after sufficient completion of pressure difference testing, flow measurements and detection and control verification.		X		

<input type="checkbox"/>	FABRICATED ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	The RDP shall identify any structural, load-bearing or lateral load-resisting members or assemblies that are specified to be fabricated off site i.e. in a fabricator's shop. Special inspections shall be required for these items unless: a. The fabricator maintains approved detailed fabrication and quality control procedures that provide conformance to the approved construction documents and IBC 2015. b. The fabricator is registered and approved per 1704.2.5.1. See also the Fabricator Form in this packet for these items.				1704.2.5
<input type="checkbox"/>	If the members or assemblies are to be fabricated on site, refer to their respective categories.				

<input type="checkbox"/>	WIND-FORCE-RESISTANT ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Structural wood	X	X		1705.11.1
<input type="checkbox"/>	Cold-formed steel light-frame construction		X		1705.11.2
<input type="checkbox"/>	Components: Roof covering, roof deck and roof framing connections		X		1705.11.3
<input type="checkbox"/>	Components: Exterior wall covering and wall connections to roof and floor diaphragms and framing.		X		1705.11.3

<input type="checkbox"/>	SEISMIC-FORCE RESISTANT ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Structural steel			AISC 341	1705.12.1.1 1705.13.1.1 1705.13.1.3
<input type="checkbox"/>	Structural steel elements			AISC 341	1705.12.1.2 1905.13.1.2
<input type="checkbox"/>	Structural wood	X	X		1705.12.2
<input type="checkbox"/>	Cold-formed steel light-frame construction				1705.12.3
<input type="checkbox"/>	Designated seismic systems			ASCE 7: 13.2.2	1705.12.4, 1705.13.4
<input type="checkbox"/>	Arch. components: Ext.cladding, interior or exterior nonbearing walls and interior or ext veneer 30 ft or less above grade or walking surface.		X		1705.12.5
<input type="checkbox"/>	Arch. components: Exterior cladding or interior or exterior veneer weighing 5 psf or less.		X		1705.12.5
<input type="checkbox"/>	Arch. components: Interior nonbearing walls weighing 15 psf or less.		X		1705.12.5
<input type="checkbox"/>	Architectural components: Access floors		X		1705.12.5.1
<input type="checkbox"/>	Elect. Equip. anchorage for emergency and standby power systems		X		1705.12.6
<input type="checkbox"/>	Other electrical equipment anchorage		X		1705.12.6
<input type="checkbox"/>	Piping systems / mechanical units designed to carry hazardous materials: installation and anchorage		X		1705.12.6
<input type="checkbox"/>	Ductwork designed to carry hazardous materials: installation and anchorage		X		1705.12.6
<input type="checkbox"/>	Vibration isolation systems: installation and anchorage		X		1705.12.6

<input type="checkbox"/>	SPECIAL CASES: Special Inspection is required. (1705.1.1)				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Construction materials and systems that are alternatives to materials and systems prescribed by code, not addressed in other sections. [Note to RDP: you must identify specifically what is to be inspected.]				1705.1.1
<input type="checkbox"/>	Unusual design applications of materials described in the code. [Note to RDP: you must identify specifically what is to be inspected.]				
<input type="checkbox"/>	Materials and systems required to be installed per additional manufacturer's instructions that prescribe requirements not contained in the code or in referenced standards. [Note to RDP: you must identify specifically]				

Category	Special Inspector Minimum Qualifications
<input type="checkbox"/> Reinforced Concrete	<input type="checkbox"/> Current ICC Reinforced Concrete Special Inspector or ACI Concrete Constr. Inspector <input type="checkbox"/> Concrete field testing by an ACI Concrete Field Testing Technical w/ Grade 1 cert. <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> NYS Registered Design Professional Engineer (RDP) with relevant experience
<input type="checkbox"/> Pre-Stressed Concrete	<u>Pretension Tendons</u> <input type="checkbox"/> Current ICC Reinforced Concrete certification and ACI Concrete Field Testing Technician with Grade 1 certification plus one year relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience <u>Post-tension Tendons</u> <input type="checkbox"/> Current Post-Tensioning Institute (PTI) certification <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Welding	<input type="checkbox"/> Current AWS Certified Welding Inspector <input type="checkbox"/> Current ICC Structural Steel and Welding Certificate plus one year of relevant experience <input type="checkbox"/> Current Level II cert. from American Society for Non-Destructive Testing (NDT) <input type="checkbox"/> Current NDT Level III provided previously certified as NDT Level II
<input type="checkbox"/> High-Strength Bolting & Steel Frame Inspection	<input type="checkbox"/> Current ICC Structural Steel and Welding certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Masonry	<input type="checkbox"/> Current ICC Structural Masonry certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Sprayed Fire-Resistant Materials	<input type="checkbox"/> Current ICC Spray-Applied Fireproofing certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Excavation and filling; verification of soils; piling & drilled piers; modular retaining walls	<input type="checkbox"/> Current Level II certification in geotechnical engineering technology/construction from the National Institute for Certification in Engineering Technologies (NICET) <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Inspection of Fabricators	<input type="checkbox"/> Precast: Current ICC Reinforced Concrete certification plus one year relevant exp <input type="checkbox"/> Bar Joist: see welding requirements <input type="checkbox"/> Metal Building: see welding requirements <input type="checkbox"/> Structural Steel: see welding requirements
<input type="checkbox"/> Seismic Items not addressed elsewhere	<input type="checkbox"/> Qualified person with one year of relevant experience <input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience
<input type="checkbox"/> Exterior Insulation and Finish System	<input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience
<input type="checkbox"/> Smoke Control	<input type="checkbox"/> Expertise in fire protection engineering, mechanical engineering and certified as an air balancer <input type="checkbox"/> The RDP responsible for design
<input type="checkbox"/> Fire-Resistant Penetrations & Joints, Special Cases	<input type="checkbox"/> Qualified person with one year of relevant experience <input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience

Contractor's Statement of Responsibility Form

SUCF Project No: _____

Project Title: _____

Contractor: _____

Contractor's Acknowledgement of Special Requirements

I hereby acknowledge that I have received, read and understand there are special requirements contained in the contract documents. I hereby acknowledge control will be exercised to obtain conformance with the contract documents.

As the Contractor, I will coordinate with the Special Inspector(s) in order to accommodate all inspections and tests as required. I will integrate all inspection activities as provided by the Special Inspector into the Project Schedule.

☐ **I understand if this box is checked, this project includes the construction of a seismic-force-resisting system and / or a wind-force-resisting system as noted on page 2 of the Statement of Special Inspections.**

(Print name / Signature / date)

Fabricator's Certificate of Compliance Form

SUCF Project No: _____

Project Title: _____

Contractor: _____

Fabricator: _____

Fabricated Item: *Structural, load-bearing or lateral load-resisting members of assemblies consisting of materials assembled prior to installation in a building or structure, or subject to operations such as heat treatment, thermal cutting, cold working or reforming after manufacture and prior to installation in a building or structure. Materials produced in accordance with standards referenced by this code, such as rolled structural steel shapes, steel reinforcing bars, masonry units and wood structural panels, or in accordance with a referenced standard that provides requirements for quality control done under the supervision of a third-party quality control agency, are not "fabricated items".*

In lieu of special inspections during fabrication, a fabricator shall provide with the initial shop drawings for consideration:

- The fabricator's written procedural and quality control manuals AND
- Documentation from the most recent audit of fabrication practices.

Date of Last Audit: _____

Company that conducted the Audit:

Contact Person: _____

Name: _____

Address: _____

For ease in evaluation, the Fabricator may attach copies of a Fabricator's Certification or a copy of the latest building code evaluation service report, if applicable.

Date of most recent Approval: _____ **Certification Number:** _____

Certificate issued by: Name: _____ Address: _____

Contact Person: _____

.....
Post Fabrication Certification:

Provide a description of the structural, load bearing or lateral load-resisting assemblies that have been fabricated:

I hereby certify the items described above were fabricated in strict accordance with the approved contract documents.

(Print Name / Signature)

(Print title)

Special Inspector / Approved Agency Final Report

SUCF Project No: _____

Project Title: _____

Contractor: _____

Special Inspector / Approved Agency: _____

We have completed the specified inspections and testing as identified in the Statement of Special Inspections dated _____. To the best of my information, knowledge and belief, the inspections we have completed have been performed and all discovered discrepancies have been reported to the Registered Design Professional in Responsible Charge.

All interim reports submitted prior to this Final Report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,

(Signature / date)

(Seal or Certification)

(Print name)

(Print title)

Statement of Special Inspections

SUCF Project No: 081058-00

Project Title: UPGRADE ELEVATORS CAMPUS WIDE AT SUNY NEW PALTZ
AT LECTURE CENTER

Registered Design Professionals in Responsible Charge:

Architect: (Name) (Address)
MDSZERBATY ASSOCIATES ARCHITECTURE
307 SEVENTH AVENUE, SUITE 1501, NEW YORK, NY 10001

Structural Engineer: _____

Mechanical Engineer: IAQ SYSTEMS INC CONSULTING ENGINEERS
555 EIGHTH AVENUE, SUITE 1502, NEW YORK, NY 10018

- ✓ Identification of Seismic-Force Resisting Systems and Wind-Force-Resisting Systems
- ✓ Required Special Inspections and Frequencies
- ✓ Special Inspector Minimum Qualifications
- ✓ Contractor's Statement of Responsibility Form
- ✓ Fabricator's Certificate of Compliance Form *(only needed if there are fabricated items)*
- ✓ Special Inspector / Approved Agency Final Report

As the Registered Design Professional(s) in Responsible Charge for this project, I/we certify this Statement of Special Inspections includes a complete list of materials and work that require special inspection and testing and the minimum qualifications of the Special Inspectors / testing agencies required to be considered for conducting the inspections and testing. This represents the complete extent of special inspections and testing required during the construction of this project and complies with the NYS 2017 Uniform Fire Prevention and Building Code.



(Affix professional seal)

(Affix professional seal)

(Affix professional seal)

Arch.: MICHAEL D. SZERBATY Str. Eng.: _____ Mech. Eng.: SAI BARADE
(Print name / date) (Print name / date) (Print name / date)

(Signature)

(Signature)

(Signature)

Identification of Seismic-Force-Resisting Systems and Wind-Force-Resisting Systems

➤ **Seismic-Force-Resisting Systems:**

The Seismic Design Category (SDC) is Choose an item

There Choose an item seismic-force-resisting systems in this project.

There Choose an item designated seismic systems.

Additional Items for Seismic Design Categories B, C, D or F:

- ☐ Isolator units and energy dissipation devices.

Additional Items for Seismic Design Categories C, D, E or F:

- ☐ HVAC ducts designed to carry hazardous materials.
- ☐ Piping / mechanical units designed to carry hazardous materials.
- ☐ Electrical equipment used for emergency or standby power systems.
- ☐ Vibration isolation systems requiring 1/4" max between equipment support frames and restraint.

Additional items for Seismic Design Categories D, E or F:

- ☐ Exterior cladding, interior or exterior non-bearing walls >30 ft above grade or walking surfaces.
- ☐ Exterior cladding, interior or exterior non-bearing walls weighing >5 psf.
- ☐ Interior non-bearing walls weighing >15 psf.
- ☐ Access floors.
- ☐ Steel storage racks taller than 8 feet.
- ☐ Code-formed steel special bolted moment frames.

Additional items for Seismic Design Categories E or F:

- ☐ Electrical equipment.

➤ **Wind-Force-Resisting Systems:**

☐ Wind Category B, wind speed minimum 120 MPH.

☐ Wind Category C or D, wind speed minimum 110 MPH.

Design includes wind-force-resisting systems and components:

- ☐ Roof covering, roof deck and roof framing connections.
- ☐ Exterior wall covering and wall connections to roof and floor diaphragms and framing.
- ☐ Cold-formed steel light-frame construction
- ☐ Structural wood

Required Special Inspections, Tests, Frequencies

<input type="checkbox"/>	STEEL CONSTRUCTION: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Minimum inspections prior to welding.	X		AISC 360 Table N5.4-1	1705.2.1
<input type="checkbox"/>	Minimum inspections during welding.	X		AISC 360 Table N5.4-2	
<input type="checkbox"/>	Minimum inspections after welding.		X	AISC 360 Table N5.4-3	
<input type="checkbox"/>	UT shall be performed on CJP groove welds subject to transversely applied tension loading in butt, T-, and Corner joints. a. For Risk Category III or IV structures b. For Risk Category II structures		X 100% X 10%	AISC 360 N5.5b	
<input type="checkbox"/>	Minimum inspections prior to high-strength bolting (except for snug-tight joints).	X		AISC 360 Table N5.6-1	
<input type="checkbox"/>	Minimum inspections during high-strength bolting (except for snug-tight joints). For pretension/slip-critical joints: a. Turn-of-nut with match marking, direct-tension-indicator method, twist-off-type tension control bolt method. b. Calibrated wrench method, turn-of-nut method without matchmaking.	X	X	AISC 360 Table N5.6-2	
<input type="checkbox"/>	Minimum inspections after high-strength bolting.		X	AISC 360 Table N5.6-3	
<input type="checkbox"/>	Inspect fabricated or erected steel as appropriate to verify compliance with the construction drawings. Inspect braces, stiffeners, member locations, and joint details.		X	AISC 360 N5.7	
<input type="checkbox"/>	Inspect during placement of anchor rods and other embedments supporting structural steel for compliance with the construction dwgs.	X		AISC 360 N5.7	
<input type="checkbox"/>	Inspect welding of steel headed stud anchors.	X		AISC 360 N6 AWS D1.1/D1.1M	
<input type="checkbox"/>	Verification for metal deck: a. Welding consumables, welding procedure specs, welder's qualifications prior to work, observation of work in progress, and visual inspection of all welds. b. Fasteners to be used prior to work, observation of work in progress to confirm conformance to manufacturer's recommendations, and visual inspection of completed installation.	X X		AISC 360 N6	

<input type="checkbox"/>	COLD-FORMED STEEL DECK: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Deck Placement		X	SDI QA/QC Table 1.1	1705.2.2
<input type="checkbox"/>	Inspection or Execution Tasks After to Deck Placement		X	SDI QA/QC Table 1.2	
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Welding		X	SDI QA/QC Table 1.3	
<input type="checkbox"/>	Inspection or Execution Tasks During Welding	X		SDI QA/QC Table 1.4	
<input type="checkbox"/>	Inspection or Execution Tasks After to Welding		X	SDI QA/QC Table 1.5	
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Mechanical Fastening		X	SDI QA/QC Table 1.6	
<input type="checkbox"/>	Inspection or Execution Tasks During to Mechanical Fastening	X		SDI QA/QC Table 1.7	
<input type="checkbox"/>	Inspection or Execution Tasks After to Mechanical Fastening		X	SDI QA/QC Table 1.8	

<input type="checkbox"/>	OPEN-WEB STEEL JOISTS AND /OR JOIST GIRDERS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
	Installation of open-web steel joists and joist girders.				Table 1705.2.3
<input type="checkbox"/>	End connections – welding or bolted	-	X	SJI CJ,SJI K SJI LH/DLH OR SJI JG	
<input type="checkbox"/>	Bridging – horizontal or diagonal a. Standard bridging b. Bridging that differs from the SJI specifications.	-	X	SJI CJ,SJI K SJI LH/DLH OR SJI JG	

<input type="checkbox"/>	COLD-FORMED STEEL TRUSSES SPANNING 60 FT OR GREATER: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify the temporary installation of restraint / bracing is installed per the approved truss submittal package.		X		1705.2.4
<input type="checkbox"/>	Verify the permanent individual truss member restraint / ricing is installed per the approved truss submittal package.		X		

<input type="checkbox"/>	CONCRETE CONSTRUCTION: Special Inspection and Testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect reinforcement, including restressing tendons, and verify placement.	-	X	ACI 318 Ch. 20, 25.2, 25.3, 26.5.1- 26.5.3	1908.4
<input type="checkbox"/>	Reinforcing bar welding: a. Verify weldability of reinforcing bars other than ASTM A706; b. Inspect single-pass fillet welds, maximum 5/16"; and c. Inspect all other welds	X	X X	AWS D1.4 ACI 318:26.5.4	
<input type="checkbox"/>	Inspect anchors cast in concrete.	-	X	ACI 318:17.8.2	-
<input type="checkbox"/>	Inspect anchors post-installed in hardened concrete members. a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads. b. Mechanical and adhesive anchors not defined in 4.a.	X	X	ACI 318: 7.8.2.4 ACI 318: 17.8.2	Table 1705.3 footnote 'b'.
<input type="checkbox"/>	Verify use of required design mix.	-	X	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
<input type="checkbox"/>	Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	-	ASTM C172 ASTM C31 ACI 318: 26.4.5,26.12	1908.10
<input type="checkbox"/>	Inspect concrete and shotcrete placement for proper application techniques.	X	-	ACI 318: 26.4.5	1908.6, .7, and .8
<input type="checkbox"/>	Verify maintenance of specified curing temperature and techniques.	-	X	ACI 318: 26.4.7- 26.4.9	1908.9
<input type="checkbox"/>	Inspect pre-stressed concrete for: a. Application of pre-stressing forces; and b. Grouting of bonded pre-stressing tendons	X X	- -	ACI 318: 6.9.2.1 ACI 318: 6.9.2.3	
<input type="checkbox"/>	Inspect erection of precast concrete members.	-	X	ACI 318: 6.8	-
<input type="checkbox"/>	Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	-	X	ACI 318: 26.10.2	-
<input type="checkbox"/>	Inspect formwork for shape, location and dimensions of the concrete member being formed.	-	X	ACI 318: 26.10.1(b)	-

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level A – For Risk Category I, II, or III, designed using Prescriptive or Empirical design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify certificates of compliance prior to construction.		X	TMS 402, TMS 602 Table 3.1.1	1705.4

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level B – For Risk Category I, II, or III, designed using Engineered design methods, or Risk Category IV designed using Prescriptive design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verification of Slump flow and Visual Stability Index (VSI) as delivered to the project site in accordance with Specification Article 1.5 B.1.b.3 for self-consolidating grout.	X	X	TMS 402 Table 3.1.2	1705.4
<input type="checkbox"/>	Verification of f'_m and f'_{AAC} in accordance with Specification Article 1.4B prior to construction, except where specifically exempted by TMS 402.		X	TMS 402 Table 3.1.2	
<input type="checkbox"/>	Verify compliance with the approved submittals.		X	TMS 602 Art 1.5	
<input type="checkbox"/>	As masonry construction begins, verify the following are in compliance:				
<input type="checkbox"/>	Proportions of site-prepared mortar		X	TMS 602 Art 2.1, 2.6A	
<input type="checkbox"/>	Construction of mortar joints		X	TMS 602 Art 3.3B	
<input type="checkbox"/>	Grade and size of prestressing tendons and anchorages		X	TMS 602 Art 2.4B, 2.4H	
<input type="checkbox"/>	Location of reinforcement, connectors and prestressing tendons and anchorages		X	TMS 602 Art 3.4, 3.6A	
<input type="checkbox"/>	Prestressing technique		X	TMS 602 Art 3.6B	
<input type="checkbox"/>	Properties of thin-set mortar for AAC masonry	X	X	TMS 602 Art 2.1C	
<input type="checkbox"/>	Prior to grouting, verify that the following are in compliance:				
<input type="checkbox"/>	Grout space		X	TMS 602 Art 3.2D, 3.2F	
<input type="checkbox"/>	Grade, type and size of reinforcement and anchor bolts, and prestressing tendons and anchorages		X	TMS 402 Sec 6.1 TMS 602 Art 2.4, 3.4	
<input type="checkbox"/>	Placement of reinforcements, connectors and prestressing tendons and anchorages		X	TMS 402 Sec 6.1, 6.2.1, 6.2.6, 6.2.7 TMS 602 Art 3.2E, 3.4, 3.6A	
<input type="checkbox"/>	Proportions of site-prepared grout and prestressing grout for bonded tendon		X	TMS 602 Art 2.6B, 2.4G.1.b	
<input type="checkbox"/>	Construction of mortar joints.		X	TMS 602 Art 3.3B	

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level C – For Risk Category IV designed using Engineered design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verification of f_m and f_{AAC} in accordance with Specification Article 1.4B prior to construction and for every 5,000 sq. ft. during construction.	X	X	TMS 402 Table 3.1.3	1705.4
<input type="checkbox"/>	Verification of proportions of materials in premixed or preblended mortar prestressing grout, and grout other than self-consolidating grout, as delivered to the project site.	X	X	TMS 402 Table 3.1.3	
<input type="checkbox"/>	Verification of Slump flow and Visual Stability Index (VSI) as delivered to the project site in accordance with Specification Article 1.5 B.1.b.3 for self-consolidating grout.	X	X	TMS 402 Table 3.1.3	
<input type="checkbox"/>	Verify compliance with the approved submittals.		X	TMS 602 Art 1.5	
<input type="checkbox"/>	Verify that the following are in compliance:				
<input type="checkbox"/>	Proportions of site-mixed mortar, grout and prestressing grout for bonded tendons.		X	TMS 602 Art 2.1, 2.6A, 2.6B, 2.6C, 2.4G.1.b	
<input type="checkbox"/>	Grade, type, and size of reinforcement and anchor bolts, and prestressing tendons and anchorages		X	TMS 402 Sec 6.1, TMS 602 Art 2.4, 3.4	
<input type="checkbox"/>	Placement of masonry units and construction of mortar joints.		X	TMS 602 Art 3.3B	
<input type="checkbox"/>	Placement of reinforcement, connectors and prestressing tendons and anchorages	X		TMS 402 Sec 6.1, 6.2.1, 6.2.6, 6.2.7 TMS 602 Art 3.2E, 3.4, 3.6A	
<input type="checkbox"/>	Grout space prior to grouting	X		TMS 602 Art 3.2D, 3.2F	
<input type="checkbox"/>	Placement of grout and prestressing grout for bonding tendons.	X		TMS 602 Art 3.5, 3.6C	
<input type="checkbox"/>	Size and location of structural elements		X	TMS 602 Art 3.3F	
<input type="checkbox"/>	Type, size and location of anchors including other details of anchorage of masonry to structural members, frames or other construction.	X		TMS 402 Sec 1.2.1(e), 6.1.4.3, 6.2.1	
<input type="checkbox"/>	Welding of reinforcement	X		TMS 402 Sec 8.1.6.7.2, 9.3.3.4(c), 11.3.3.4(b)	
<input type="checkbox"/>	Preparation, construction and protection of masonry during code weather (temperature below 40 degrees F) or hot weather (temperature above 90 degrees F)		X	TMS 602 Art 1.8C, 1.8D	
<input type="checkbox"/>	Application and measurement of prestressing force	X		TMS 602 Art 3.6B	
<input type="checkbox"/>	Placement of AAC masonry units and construction of thin-bed mortar joints	X		TMS 602 Art 3.3B.9, 3.3F.1.b	
<input type="checkbox"/>	Properties of thin-bed mortar for AAC masonry	X		TMS 602 Art 2.1 C.1	
<input type="checkbox"/>	Observe preparation of grout specimens, mortar specimens and / or prisms.	X		TMS 602 Art 1.4B.2.a.3, 1.4B.2.b.3, 1.4B.2.c.3, 1.4B.3, 1.4B.4	

<input type="checkbox"/>	WOOD CONSTRUCTION: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect high-load diaphragms for grade/thickness of sheathing, nominal size of members, fastener size, number and spacing.		X	Contr. docs	1705.5.1, 2306.2
<input type="checkbox"/>	Metal-plate-connected wood trusses spanning 60 feet or greater: temporary installation restraint / bracing and permanent individual truss member restraint / bracing.		X	App. truss submittal package	1705.5.2

<input type="checkbox"/>	SOILS: Special Inspection and Testing are required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	-	X	Geotech Report, Contract Docs	Table 1705.6
<input type="checkbox"/>	Verify excavations are extended to proper depth and have reached proper material.	-	X		
<input type="checkbox"/>	Perform classification and testing of compacted fill materials.				
<input type="checkbox"/>	Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	X	-		
<input type="checkbox"/>	Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.	-	X		
<input type="checkbox"/>	During fill placement inspector shall verify that proper materials and procedures.	X			

<input type="checkbox"/>	DRIVEN DEEP FOUNDATION ELEMENTS: Special Inspection and Testing are required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify element materials, sizes and lengths comply with the requirements.	X	-	Geotech Report, Contract Docs	Table 1705.7
<input type="checkbox"/>	Determine capacities of test elements and conduct additional load tests, as required.	X	-		
<input type="checkbox"/>	Inspect driving operations and maintain complete and accurate records for each element.	X	-		
<input type="checkbox"/>	Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element.	X	-		
<input type="checkbox"/>	For steel elements, perform additional special inspections in accordance with Section 1705.2. (See Special Inspections for Concrete Construction.)	-	-		
<input type="checkbox"/>	For concrete elements and concrete-filled elements, perform tests and additional special inspections in accordance with Section 1705.3. (See Special Inspections for Concrete Construction)	-	-		
<input type="checkbox"/>	If applicable, RDP to identify: specialty elements, additional insp.	-	-		

<input type="checkbox"/>	CAST-IN-PLACE DEEP FOUNDATION ELEMENTS: Special Inspection and Testing is required.				
	Type	Continu- ous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect drilling operations and maintain complete and accurate records for each element.	X	-	Geotech Report, Contract Docs	Table 1705.8
<input type="checkbox"/>	Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end-bearing strata capacity. Record concrete or grout volumes.	X	-		
<input type="checkbox"/>	For concrete elements, perform tests and additional special inspections in accordance with Section 1705.3. (See Special Inspections for Concrete Construction)	-	-		

<input type="checkbox"/>	HELICAL PILE FOUNDATIONS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Installation equipment used, pile dimensions, tip elevations, final depth, final installation torque [and any other information required by the RDP] shall be recorded.	X		Geotech Rept, Contr. Docs	1705.9

<input type="checkbox"/>	SPRAYED FIRE-RESISTANT MATERIALS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify surface preparation in accordance with manufacturer's written instructions				1705.14.2
<input type="checkbox"/>	Verify temperature and area ventilation before and after application in accordance with manufacturer's written instructions.				1705.14.3
<input type="checkbox"/>	Verify thickness of sprayed fire resistant materials. a. Minimum of 4 measurements per 1,000 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E605	1705.14.4
<input type="checkbox"/>	b. Minimum of 25% of structural members at each story.				
<input type="checkbox"/>	Verify density of sprayed fire resistant materials. a. Minimum of one sample per 2,500 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E605	1705.14.5
<input type="checkbox"/>	b. Minimum of one sample from each type of structural framing member per 2,500 SF of floor area or part thereof at each story				
<input type="checkbox"/>	Verify cohesive/adhesive bond strength of sprayed fire resistant materials. a. Minimum of one sample per 2,500 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E736	1705.14.6
<input type="checkbox"/>	b. Minimum of one sample from each type of structural framing member per 2,500 SF of floor area or part thereof at each story				
<input type="checkbox"/>	c. Bond tests to qualify a primer, paint, or encapsulant when acceptable bond strength performance between these coatings and the fire resistant material has not been determined.				
<input type="checkbox"/>	Condition of finished application.				1705.14.1

<input type="checkbox"/>	MASTIC AND INTUMESCENT FIRE-RESISTANT COATINGS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify surface preparation, application, and thickness in accordance with manufacturer's written instructions when applied to structural elements and decks.			AWCI 12-B	1705.15

<input type="checkbox"/>	EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS): Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Water-resistive barrier coatings must be inspected when installed over a sheathing substrate.			ASTM E2570	1705.16.1
<input type="checkbox"/>	EIFS applications not over a water-resistive barrier, masonry, or concrete.				1705.16

<input checked="" type="checkbox"/>	FIRE-RESISTANT PENETRATIONS AND JOINTS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input checked="" type="checkbox"/>	For high-rise buildings or Risk Category III or IV buildings inspect through-penetrations and membrane penetration firestops.			ASTM E2174, ASTM E814, UL 1479	1705.17, 714.3.1.2 714.4.2
<input checked="" type="checkbox"/>	For high-rise buildings or Risk Category III or IV buildings inspect fire-resistant joint systems and perimeter fire barrier systems.			ASTM: E119, E2393, E1966, E2307, UL 2079	1705.17, 715.3, 715.4

<input type="checkbox"/>	SMOKE CONTROL SYSTEM: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Smoke control systems are to be tested during erection of ductwork and prior to concealment for leakage testing and recording of device location.		X		1705.18.1
<input type="checkbox"/>	Smoke control systems are to be tested prior to occupancy and after sufficient completion of pressure difference testing, flow measurements and detection and control verification.		X		

<input type="checkbox"/>	FABRICATED ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	The RDP shall identify any structural, load-bearing or lateral load-resisting members or assemblies that are specified to be fabricated off site i.e. in a fabricator's shop. Special inspections shall be required for these items unless: a. The fabricator maintains approved detailed fabrication and quality control procedures that provide conformance to the approved construction documents and IBC 2015. b. The fabricator is registered and approved per 1704.2.5.1. See also the Fabricator Form in this packet for these items.				1704.2.5
<input type="checkbox"/>	If the members or assemblies are to be fabricated on site, refer to their respective categories.				

<input type="checkbox"/>	WIND-FORCE-RESISTANT ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Structural wood	X	X		1705.11.1
<input type="checkbox"/>	Cold-formed steel light-frame construction		X		1705.11.2
<input type="checkbox"/>	Components: Roof covering, roof deck and roof framing connections		X		1705.11.3
<input type="checkbox"/>	Components: Exterior wall covering and wall connections to roof and floor diaphragms and framing.		X		1705.11.3

<input type="checkbox"/>	SEISMIC-FORCE RESISTANT ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Structural steel			AISC 341	1705.12.1.1 1705.13.1.1 1705.13.1.3
<input type="checkbox"/>	Structural steel elements			AISC 341	1705.12.1.2 1905.13.1.2
<input type="checkbox"/>	Structural wood	X	X		1705.12.2
<input type="checkbox"/>	Cold-formed steel light-frame construction				1705.12.3
<input type="checkbox"/>	Designated seismic systems			ASCE 7: 13.2.2	1705.12.4, 1705.13.4
<input type="checkbox"/>	Arch. components: Ext.cladding, interior or exterior nonbearing walls and interior or ext veneer 30 ft or less above grade or walking surface.		X		1705.12.5
<input type="checkbox"/>	Arch. components: Exterior cladding or interior or exterior veneer weighing 5 psf or less.		X		1705.12.5
<input type="checkbox"/>	Arch. components: Interior nonbearing walls weighing 15 psf or less.		X		1705.12.5
<input type="checkbox"/>	Architectural components: Access floors		X		1705.12.5.1
<input type="checkbox"/>	Elect. Equip. anchorage for emergency and standby power systems		X		1705.12.6
<input type="checkbox"/>	Other electrical equipment anchorage		X		1705.12.6
<input type="checkbox"/>	Piping systems / mechanical units designed to carry hazardous materials: installation and anchorage		X		1705.12.6
<input type="checkbox"/>	Ductwork designed to carry hazardous materials: installation and anchorage		X		1705.12.6
<input type="checkbox"/>	Vibration isolation systems: installation and anchorage		X		1705.12.6

<input type="checkbox"/>	SPECIAL CASES: Special Inspection is required. (1705.1.1)				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Construction materials and systems that are alternatives to materials and systems prescribed by code, not addressed in other sections. [Note to RDP: you must identify specifically what is to be inspected.]				1705.1.1
<input type="checkbox"/>	Unusual design applications of materials described in the code. [Note to RDP: you must identify specifically what is to be inspected.]				
<input type="checkbox"/>	Materials and systems required to be installed per additional manufacturer's instructions that prescribe requirements not contained in the code or in referenced standards. [Note to RDP: you must identify specifically]				

Category	Special Inspector Minimum Qualifications
<input type="checkbox"/> Reinforced Concrete	<input type="checkbox"/> Current ICC Reinforced Concrete Special Inspector or ACI Concrete Constr. Inspector <input type="checkbox"/> Concrete field testing by an ACI Concrete Field Testing Technical w/ Grade 1 cert. <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> NYS Registered Design Professional Engineer (RDP) with relevant experience
<input type="checkbox"/> Pre-Stressed Concrete	<u>Pretension Tendons</u> <input type="checkbox"/> Current ICC Reinforced Concrete certification and ACI Concrete Field Testing Technician with Grade 1 certification plus one year relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience <u>Post-tension Tendons</u> <input type="checkbox"/> Current Post-Tensioning Institute (PTI) certification <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Welding	<input type="checkbox"/> Current AWS Certified Welding Inspector <input type="checkbox"/> Current ICC Structural Steel and Welding Certificate plus one year of relevant experience <input type="checkbox"/> Current Level II cert. from American Society for Non-Destructive Testing (NDT) <input type="checkbox"/> Current NDT Level III provided previously certified as NDT Level II
<input type="checkbox"/> High-Strength Bolting & Steel Frame Inspection	<input type="checkbox"/> Current ICC Structural Steel and Welding certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Masonry	<input type="checkbox"/> Current ICC Structural Masonry certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Sprayed Fire-Resistant Materials	<input type="checkbox"/> Current ICC Spray-Applied Fireproofing certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Excavation and filling; verification of soils; piling & drilled piers; modular retaining walls	<input type="checkbox"/> Current Level II certification in geotechnical engineering technology/construction from the National Institute for Certification in Engineering Technologies (NICET) <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Inspection of Fabricators	<input type="checkbox"/> Precast: Current ICC Reinforced Concrete certification plus one year relevant exp <input type="checkbox"/> Bar Joist: see welding requirements <input type="checkbox"/> Metal Building: see welding requirements <input type="checkbox"/> Structural Steel: see welding requirements
<input type="checkbox"/> Seismic Items not addressed elsewhere	<input type="checkbox"/> Qualified person with one year of relevant experience <input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience
<input type="checkbox"/> Exterior Insulation and Finish System	<input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience
<input type="checkbox"/> Smoke Control	<input type="checkbox"/> Expertise in fire protection engineering, mechanical engineering and certified as an air balancer <input type="checkbox"/> The RDP responsible for design
<input type="checkbox"/> Fire-Resistant Penetrations & Joints, Special Cases	<input type="checkbox"/> Qualified person with one year of relevant experience <input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience

Contractor's Statement of Responsibility Form

SUCF Project No: _____

Project Title: _____

Contractor: _____

Contractor's Acknowledgement of Special Requirements

I hereby acknowledge that I have received, read and understand there are special requirements contained in the contract documents. I hereby acknowledge control will be exercised to obtain conformance with the contract documents.

As the Contractor, I will coordinate with the Special Inspector(s) in order to accommodate all inspections and tests as required. I will integrate all inspection activities as provided by the Special Inspector into the Project Schedule.

☐ **I understand if this box is checked, this project includes the construction of a seismic-force-resisting system and / or a wind-force-resisting system as noted on page 2 of the Statement of Special Inspections.**

(Print name / Signature / date)

Fabricator's Certificate of Compliance Form

SUCF Project No: _____

Project Title: _____

Contractor: _____

Fabricator: _____

Fabricated Item: *Structural, load-bearing or lateral load-resisting members of assemblies consisting of materials assembled prior to installation in a building or structure, or subject to operations such as heat treatment, thermal cutting, cold working or reforming after manufacture and prior to installation in a building or structure. Materials produced in accordance with standards referenced by this code, such as rolled structural steel shapes, steel reinforcing bars, masonry units and wood structural panels, or in accordance with a referenced standard that provides requirements for quality control done under the supervision of a third-party quality control agency, are not "fabricated items".*

In lieu of special inspections during fabrication, a fabricator shall provide with the initial shop drawings for consideration:

- The fabricator's written procedural and quality control manuals AND
- Documentation from the most recent audit of fabrication practices.

Date of Last Audit: _____

Company that conducted the Audit:

Contact Person: _____

Name: _____

Address: _____

For ease in evaluation, the Fabricator may attach copies of a Fabricator's Certification or a copy of the latest building code evaluation service report, if applicable.

Date of most recent Approval: _____ **Certification Number:** _____

Certificate issued by: Name: _____ Address: _____

Contact Person: _____

.....
Post Fabrication Certification:

Provide a description of the structural, load bearing or lateral load-resisting assemblies that have been fabricated:

I hereby certify the items described above were fabricated in strict accordance with the approved contract documents.

(Print Name / Signature)

(Print title)

Special Inspector / Approved Agency Final Report

SUCF Project No: _____

Project Title: _____

Contractor: _____

Special Inspector / Approved Agency: _____

We have completed the specified inspections and testing as identified in the Statement of Special Inspections dated _____. To the best of my information, knowledge and belief, the inspections we have completed have been performed and all discovered discrepancies have been reported to the Registered Design Professional in Responsible Charge.

All interim reports submitted prior to this Final Report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,

(Signature / date)

(Seal or Certification)

(Print name)

(Print title)

Statement of Special Inspections

**THERE ARE NO SPECIAL INSPECTIONS
REQUIRED AT THIS BUILDING.**

SUCF Project No: 081058-00

Project Title: UPGRADE ELEVATORS CAMPUS WIDE AT SUNY NEW PALTZ
AT SMILEY ARTS BUILDING

Registered Design Professionals in Responsible Charge:

Architect: (Name) (Address)
MDSZERBATY ASSOCIATES ARCHITECTURE
307 SEVENTH AVENUE, SUITE 1501, NEW YORK, NY 10001

Structural Engineer: _____

Mechanical Engineer: IAQ SYSTEMS INC CONSULTING ENGINEERS
555 EIGHTH AVENUE, SUITE 1502, NEW YORK, NY 10018

- ✓ Identification of Seismic-Force Resisting Systems and Wind-Force-Resisting Systems
- ✓ Required Special Inspections and Frequencies
- ✓ Special Inspector Minimum Qualifications
- ✓ Contractor's Statement of Responsibility Form
- ✓ Fabricator's Certificate of Compliance Form (*only needed if there are fabricated items*)
- ✓ Special Inspector / Approved Agency Final Report

As the Registered Design Professional(s) in Responsible Charge for this project, I/we certify this Statement of Special Inspections includes a complete list of materials and work that require special inspection and testing and the minimum qualifications of the Special Inspectors / testing agencies required to be considered for conducting the inspections and testing. This represents the complete extent of special inspections and testing required during the construction of this project and complies with the NYS 2017 Uniform Fire Prevention and Building Code.




(Affix professional seal)

(Affix professional seal)

(Affix professional seal)

Arch.: MICHAEL D. SZERBATY Str. Eng.: _____ Mech. Eng.: SAI BARADE
(Print name / date) (Print name / date) (Print name / date)


(Signature)

(Signature)

(Signature)

Identification of Seismic-Force-Resisting Systems and Wind-Force-Resisting Systems

➤ **Seismic-Force-Resisting Systems:**

The Seismic Design Category (SDC) is Choose an item

There Choose an item seismic-force-resisting systems in this project.

There Choose an item designated seismic systems.

Additional Items for Seismic Design Categories B, C, D or F:

- ☐ Isolator units and energy dissipation devices.

Additional Items for Seismic Design Categories C, D, E or F:

- ☐ HVAC ducts designed to carry hazardous materials.
- ☐ Piping / mechanical units designed to carry hazardous materials.
- ☐ Electrical equipment used for emergency or standby power systems.
- ☐ Vibration isolation systems requiring 1/4" max between equipment support frames and restraint.

Additional items for Seismic Design Categories D, E or F:

- ☐ Exterior cladding, interior or exterior non-bearing walls >30 ft above grade or walking surfaces.
- ☐ Exterior cladding, interior or exterior non-bearing walls weighing >5 psf.
- ☐ Interior non-bearing walls weighing >15 psf.
- ☐ Access floors.
- ☐ Steel storage racks taller than 8 feet.
- ☐ Code-formed steel special bolted moment frames.

Additional items for Seismic Design Categories E or F:

- ☐ Electrical equipment.

➤ **Wind-Force-Resisting Systems:**

☐ Wind Category B, wind speed minimum 120 MPH.

☐ Wind Category C or D, wind speed minimum 110 MPH.

Design includes wind-force-resisting systems and components:

- ☐ Roof covering, roof deck and roof framing connections.
- ☐ Exterior wall covering and wall connections to roof and floor diaphragms and framing.
- ☐ Cold-formed steel light-frame construction
- ☐ Structural wood

Required Special Inspections, Tests, Frequencies

<input type="checkbox"/>	STEEL CONSTRUCTION: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Minimum inspections prior to welding.	X		AISC 360 Table N5.4-1	1705.2.1
<input type="checkbox"/>	Minimum inspections during welding.	X		AISC 360 Table N5.4-2	
<input type="checkbox"/>	Minimum inspections after welding.		X	AISC 360 Table N5.4-3	
<input type="checkbox"/>	UT shall be performed on CJP groove welds subject to transversely applied tension loading in butt, T-, and Corner joints. a. For Risk Category III or IV structures b. For Risk Category II structures		X 100% X 10%	AISC 360 N5.5b	
<input type="checkbox"/>	Minimum inspections prior to high-strength bolting (except for snug-tight joints).	X		AISC 360 Table N5.6-1	
<input type="checkbox"/>	Minimum inspections during high-strength bolting (except for snug-tight joints). For pretension/slip-critical joints: a. Turn-of-nut with match marking, direct-tension-indicator method, twist-off-type tension control bolt method. b. Calibrated wrench method, turn-of-nut method without matchmaking.	X	X	AISC 360 Table N5.6-2	
<input type="checkbox"/>	Minimum inspections after high-strength bolting.		X	AISC 360 Table N5.6-3	
<input type="checkbox"/>	Inspect fabricated or erected steel as appropriate to verify compliance with the construction drawings. Inspect braces, stiffeners, member locations, and joint details.		X	AISC 360 N5.7	
<input type="checkbox"/>	Inspect during placement of anchor rods and other embedments supporting structural steel for compliance with the construction dwgs.	X		AISC 360 N5.7	
<input type="checkbox"/>	Inspect welding of steel headed stud anchors.	X		AISC 360 N6 AWS D1.1/D1.1M	
<input type="checkbox"/>	Verification for metal deck: a. Welding consumables, welding procedure specs, welder's qualifications prior to work, observation of work in progress, and visual inspection of all welds. b. Fasteners to be used prior to work, observation of work in progress to confirm conformance to manufacturer's recommendations, and visual inspection of completed installation.	X X		AISC 360 N6	

<input type="checkbox"/>	COLD-FORMED STEEL DECK: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Deck Placement		X	SDI QA/QC Table 1.1	1705.2.2
<input type="checkbox"/>	Inspection or Execution Tasks After to Deck Placement		X	SDI QA/QC Table 1.2	
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Welding		X	SDI QA/QC Table 1.3	
<input type="checkbox"/>	Inspection or Execution Tasks During Welding	X		SDI QA/QC Table 1.4	
<input type="checkbox"/>	Inspection or Execution Tasks After to Welding		X	SDI QA/QC Table 1.5	
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Mechanical Fastening		X	SDI QA/QC Table 1.6	
<input type="checkbox"/>	Inspection or Execution Tasks During to Mechanical Fastening	X		SDI QA/QC Table 1.7	
<input type="checkbox"/>	Inspection or Execution Tasks After to Mechanical Fastening		X	SDI QA/QC Table 1.8	

<input type="checkbox"/>	OPEN-WEB STEEL JOISTS AND /OR JOIST GIRDERS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
	Installation of open-web steel joists and joist girders.				Table 1705.2.3
<input type="checkbox"/>	End connections – welding or bolted	-	X	SJI CJ,SJI K SJI LH/DLH OR SJI JG	
<input type="checkbox"/>	Bridging – horizontal or diagonal a. Standard bridging b. Bridging that differs from the SJI specifications.	-	X	SJI CJ,SJI K SJI LH/DLH OR SJI JG	

<input type="checkbox"/>	COLD-FORMED STEEL TRUSSES SPANNING 60 FT OR GREATER: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify the temporary installation of restraint / bracing is installed per the approved truss submittal package.		X		1705.2.4
<input type="checkbox"/>	Verify the permanent individual truss member restraint / ricing is installed per the approved truss submittal package.		X		

<input type="checkbox"/>	CONCRETE CONSTRUCTION: Special Inspection and Testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect reinforcement, including restressing tendons, and verify placement.	-	X	ACI 318 Ch. 20, 25.2, 25.3, 26.5.1- 26.5.3	1908.4
<input type="checkbox"/>	Reinforcing bar welding: a. Verify weldability of reinforcing bars other than ASTM A706; b. Inspect single-pass fillet welds, maximum 5/16"; and c. Inspect all other welds	X	X X	AWS D1.4 ACI 318:26.5.4	
<input type="checkbox"/>	Inspect anchors cast in concrete.	-	X	ACI 318:17.8.2	-
<input type="checkbox"/>	Inspect anchors post-installed in hardened concrete members. a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads. b. Mechanical and adhesive anchors not defined in 4.a.	X	X	ACI 318: 7.8.2.4 ACI 318: 17.8.2	Table 1705.3 footnote 'b'.
<input type="checkbox"/>	Verify use of required design mix.	-	X	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
<input type="checkbox"/>	Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	-	ASTM C172 ASTM C31 ACI 318: 26.4.5,26.12	1908.10
<input type="checkbox"/>	Inspect concrete and shotcrete placement for proper application techniques.	X	-	ACI 318: 26.4.5	1908.6, .7, and .8
<input type="checkbox"/>	Verify maintenance of specified curing temperature and techniques.	-	X	ACI 318: 26.4.7- 26.4.9	1908.9
<input type="checkbox"/>	Inspect pre-stressed concrete for: a. Application of pre-stressing forces; and b. Grouting of bonded pre-stressing tendons	X X	- -	ACI 318: 6.9.2.1 ACI 318: 6.9.2.3	
<input type="checkbox"/>	Inspect erection of precast concrete members.	-	X	ACI 318: 6.8	-
<input type="checkbox"/>	Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	-	X	ACI 318: 26.10.2	-
<input type="checkbox"/>	Inspect formwork for shape, location and dimensions of the concrete member being formed.	-	X	ACI 318: 26.10.1(b)	-

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level A – For Risk Category I, II, or III, designed using Prescriptive or Empirical design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify certificates of compliance prior to construction.		X	TMS 402, TMS 602 Table 3.1.1	1705.4

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level B – For Risk Category I, II, or III, designed using Engineered design methods, or Risk Category IV designed using Prescriptive design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verification of Slump flow and Visual Stability Index (VSI) as delivered to the project site in accordance with Specification Article 1.5 B.1.b.3 for self-consolidating grout.	X	X	TMS 402 Table 3.1.2	1705.4
<input type="checkbox"/>	Verification of f'_m and f'_{AAC} in accordance with Specification Article 1.4B prior to construction, except where specifically exempted by TMS 402.		X	TMS 402 Table 3.1.2	
<input type="checkbox"/>	Verify compliance with the approved submittals.		X	TMS 602 Art 1.5	
<input type="checkbox"/>	As masonry construction begins, verify the following are in compliance:				
<input type="checkbox"/>	Proportions of site-prepared mortar		X	TMS 602 Art 2.1, 2.6A	
<input type="checkbox"/>	Construction of mortar joints		X	TMS 602 Art 3.3B	
<input type="checkbox"/>	Grade and size of prestressing tendons and anchorages		X	TMS 602 Art 2.4B, 2.4H	
<input type="checkbox"/>	Location of reinforcement, connectors and prestressing tendons and anchorages		X	TMS 602 Art 3.4, 3.6A	
<input type="checkbox"/>	Prestressing technique		X	TMS 602 Art 3.6B	
<input type="checkbox"/>	Properties of thin-set mortar for AAC masonry	X	X	TMS 602 Art 2.1C	
<input type="checkbox"/>	Prior to grouting, verify that the following are in compliance:				
<input type="checkbox"/>	Grout space		X	TMS 602 Art 3.2D, 3.2F	
<input type="checkbox"/>	Grade, type and size of reinforcement and anchor bolts, and prestressing tendons and anchorages		X	TMS 402 Sec 6.1 TMS 602 Art 2.4, 3.4	
<input type="checkbox"/>	Placement of reinforcements, connectors and prestressing tendons and anchorages		X	TMS 402 Sec 6.1, 6.2.1, 6.2.6, 6.2.7 TMS 602 Art 3.2E, 3.4, 3.6A	
<input type="checkbox"/>	Proportions of site-prepared grout and prestressing grout for bonded tendon		X	TMS 602 Art 2.6B, 2.4G.1.b	
<input type="checkbox"/>	Construction of mortar joints.		X	TMS 602 Art 3.3B	

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level C – For Risk Category IV designed using Engineered design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verification of f_m and f_{AAC} in accordance with Specification Article 1.4B prior to construction and for every 5,000 sq. ft. during construction.	X	X	TMS 402 Table 3.1.3	1705.4
<input type="checkbox"/>	Verification of proportions of materials in premixed or preblended mortar prestressing grout, and grout other than self-consolidating grout, as delivered to the project site.	X	X	TMS 402 Table 3.1.3	
<input type="checkbox"/>	Verification of Slump flow and Visual Stability Index (VSI) as delivered to the project site in accordance with Specification Article 1.5 B.1.b.3 for self-consolidating grout.	X	X	TMS 402 Table 3.1.3	
<input type="checkbox"/>	Verify compliance with the approved submittals.		X	TMS 602 Art 1.5	
<input type="checkbox"/>	Verify that the following are in compliance:				
<input type="checkbox"/>	Proportions of site-mixed mortar, grout and prestressing grout for bonded tendons.		X	TMS 602 Art 2.1, 2.6A, 2.6B, 2.6C, 2.4G.1.b	
<input type="checkbox"/>	Grade, type, and size of reinforcement and anchor bolts, and prestressing tendons and anchorages		X	TMS 402 Sec 6.1, TMS 602 Art 2.4, 3.4	
<input type="checkbox"/>	Placement of masonry units and construction of mortar joints.		X	TMS 602 Art 3.3B	
<input type="checkbox"/>	Placement of reinforcement, connectors and prestressing tendons and anchorages	X		TMS 402 Sec 6.1, 6.2.1, 6.2.6, 6.2.7 TMS 602 Art 3.2E, 3.4, 3.6A	
<input type="checkbox"/>	Grout space prior to grouting	X		TMS 602 Art 3.2D, 3.2F	
<input type="checkbox"/>	Placement of grout and prestressing grout for bonding tendons.	X		TMS 602 Art 3.5, 3.6C	
<input type="checkbox"/>	Size and location of structural elements		X	TMS 602 Art 3.3F	
<input type="checkbox"/>	Type, size and location of anchors including other details of anchorage of masonry to structural members, frames or other construction.	X		TMS 402 Sec 1.2.1(e), 6.1.4.3, 6.2.1	
<input type="checkbox"/>	Welding of reinforcement	X		TMS 402 Sec 8.1.6.7.2, 9.3.3.4(c), 11.3.3.4(b)	
<input type="checkbox"/>	Preparation, construction and protection of masonry during code weather (temperature below 40 degrees F) or hot weather (temperature above 90 degrees F)		X	TMS 602 Art 1.8C, 1.8D	
<input type="checkbox"/>	Application and measurement of prestressing force	X		TMS 602 Art 3.6B	
<input type="checkbox"/>	Placement of AAC masonry units and construction of thin-bed mortar joints	X		TMS 602 Art 3.3B.9, 3.3F.1.b	
<input type="checkbox"/>	Properties of thin-bed mortar for AAC masonry	X		TMS 602 Art 2.1 C.1	
<input type="checkbox"/>	Observe preparation of grout specimens, mortar specimens and / or prisms.	X		TMS 602 Art 1.4B.2.a.3, 1.4B.2.b.3, 1.4B.2.c.3, 1.4B.3, 1.4B.4	

<input type="checkbox"/>	WOOD CONSTRUCTION: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect high-load diaphragms for grade/thickness of sheathing, nominal size of members, fastener size, number and spacing.		X	Contr. docs	1705.5.1, 2306.2
<input type="checkbox"/>	Metal-plate-connected wood trusses spanning 60 feet or greater: temporary installation restraint / bracing and permanent individual truss member restraint / bracing.		X	App. truss submittal package	1705.5.2

<input type="checkbox"/>	SOILS: Special Inspection and Testing are required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	-	X	Geotech Report, Contract Docs	Table 1705.6
<input type="checkbox"/>	Verify excavations are extended to proper depth and have reached proper material.	-	X		
<input type="checkbox"/>	Perform classification and testing of compacted fill materials.				
<input type="checkbox"/>	Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	X	-		
<input type="checkbox"/>	Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.	-	X		
<input type="checkbox"/>	During fill placement inspector shall verify that proper materials and procedures.	X			

<input type="checkbox"/>	DRIVEN DEEP FOUNDATION ELEMENTS: Special Inspection and Testing are required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify element materials, sizes and lengths comply with the requirements.	X	-	Geotech Report, Contract Docs	Table 1705.7
<input type="checkbox"/>	Determine capacities of test elements and conduct additional load tests, as required.	X	-		
<input type="checkbox"/>	Inspect driving operations and maintain complete and accurate records for each element.	X	-		
<input type="checkbox"/>	Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element.	X	-		
<input type="checkbox"/>	For steel elements, perform additional special inspections in accordance with Section 1705.2. (See Special Inspections for Concrete Construction.)	-	-		
<input type="checkbox"/>	For concrete elements and concrete-filled elements, perform tests and additional special inspections in accordance with Section 1705.3. (See Special Inspections for Concrete Construction)	-	-		
<input type="checkbox"/>	If applicable, RDP to identify: specialty elements, additional insp.	-	-		

<input type="checkbox"/>	CAST-IN-PLACE DEEP FOUNDATION ELEMENTS: Special Inspection and Testing is required.				
	Type	Continu- ous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect drilling operations and maintain complete and accurate records for each element.	X	-	Geotech Report, Contract Docs	Table 1705.8
<input type="checkbox"/>	Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end-bearing strata capacity. Record concrete or grout volumes.	X	-		
<input type="checkbox"/>	For concrete elements, perform tests and additional special inspections in accordance with Section 1705.3. (See Special Inspections for Concrete Construction)	-	-		

<input type="checkbox"/>	HELICAL PILE FOUNDATIONS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Installation equipment used, pile dimensions, tip elevations, final depth, final installation torque [and any other information required by the RDP] shall be recorded.	X		Geotech Rept, Contr. Docs	1705.9

<input type="checkbox"/>	SPRAYED FIRE-RESISTANT MATERIALS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify surface preparation in accordance with manufacturer's written instructions				1705.14.2
<input type="checkbox"/>	Verify temperature and area ventilation before and after application in accordance with manufacturer's written instructions.				1705.14.3
<input type="checkbox"/>	Verify thickness of sprayed fire resistant materials. a. Minimum of 4 measurements per 1,000 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E605	1705.14.4
<input type="checkbox"/>	b. Minimum of 25% of structural members at each story.				
<input type="checkbox"/>	Verify density of sprayed fire resistant materials. a. Minimum of one sample per 2,500 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E605	1705.14.5
<input type="checkbox"/>	b. Minimum of one sample from each type of structural framing member per 2,500 SF of floor area or part thereof at each story				
<input type="checkbox"/>	Verify cohesive/adhesive bond strength of sprayed fire resistant materials. a. Minimum of one sample per 2,500 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E736	1705.14.6
<input type="checkbox"/>	b. Minimum of one sample from each type of structural framing member per 2,500 SF of floor area or part thereof at each story				
<input type="checkbox"/>	c. Bond tests to qualify a primer, paint, or encapsulant when acceptable bond strength performance between these coatings and the fire resistant material has not been determined.				
<input type="checkbox"/>	Condition of finished application.				1705.14.1

<input type="checkbox"/>	MASTIC AND INTUMESCENT FIRE-RESISTANT COATINGS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify surface preparation, application, and thickness in accordance with manufacturer's written instructions when applied to structural elements and decks.			AWCI 12-B	1705.15

<input type="checkbox"/>	EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS): Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Water-resistive barrier coatings must be inspected when installed over a sheathing substrate.			ASTM E2570	1705.16.1
<input type="checkbox"/>	EIFS applications not over a water-resistive barrier, masonry, or concrete.				1705.16

<input type="checkbox"/>	FIRE-RESISTANT PENETRATIONS AND JOINTS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	For high-rise buildings or Risk Category III or IV buildings inspect through-penetrations and membrane penetration firestops.			ASTM E2174, ASTM E814, UL 1479	1705.17, 714.3.1.2 714.4.2
<input type="checkbox"/>	For high-rise buildings or Risk Category III or IV buildings inspect fire-resistant joint systems and perimeter fire barrier systems.			ASTM: E119, E2393, E1966, E2307, UL 2079	1705.17, 715.3, 715.4

<input type="checkbox"/>	SMOKE CONTROL SYSTEM: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Smoke control systems are to be tested during erection of ductwork and prior to concealment for leakage testing and recording of device location.		X		1705.18.1
<input type="checkbox"/>	Smoke control systems are to be tested prior to occupancy and after sufficient completion of pressure difference testing, flow measurements and detection and control verification.		X		

<input type="checkbox"/>	FABRICATED ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	The RDP shall identify any structural, load-bearing or lateral load-resisting members or assemblies that are specified to be fabricated off site i.e. in a fabricator's shop. Special inspections shall be required for these items unless: a. The fabricator maintains approved detailed fabrication and quality control procedures that provide conformance to the approved construction documents and IBC 2015. b. The fabricator is registered and approved per 1704.2.5.1. See also the Fabricator Form in this packet for these items.				1704.2.5
<input type="checkbox"/>	If the members or assemblies are to be fabricated on site, refer to their respective categories.				

<input type="checkbox"/>	WIND-FORCE-RESISTANT ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Structural wood	X	X		1705.11.1
<input type="checkbox"/>	Cold-formed steel light-frame construction		X		1705.11.2
<input type="checkbox"/>	Components: Roof covering, roof deck and roof framing connections		X		1705.11.3
<input type="checkbox"/>	Components: Exterior wall covering and wall connections to roof and floor diaphragms and framing.		X		1705.11.3

<input type="checkbox"/>	SEISMIC-FORCE RESISTANT ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Structural steel			AISC 341	1705.12.1.1 1705.13.1.1 1705.13.1.3
<input type="checkbox"/>	Structural steel elements			AISC 341	1705.12.1.2 1905.13.1.2
<input type="checkbox"/>	Structural wood	X	X		1705.12.2
<input type="checkbox"/>	Cold-formed steel light-frame construction				1705.12.3
<input type="checkbox"/>	Designated seismic systems			ASCE 7: 13.2.2	1705.12.4, 1705.13.4
<input type="checkbox"/>	Arch. components: Ext.cladding, interior or exterior nonbearing walls and interior or ext veneer 30 ft or less above grade or walking surface.		X		1705.12.5
<input type="checkbox"/>	Arch. components: Exterior cladding or interior or exterior veneer weighing 5 psf or less.		X		1705.12.5
<input type="checkbox"/>	Arch. components: Interior nonbearing walls weighing 15 psf or less.		X		1705.12.5
<input type="checkbox"/>	Architectural components: Access floors		X		1705.12.5.1
<input type="checkbox"/>	Elect. Equip. anchorage for emergency and standby power systems		X		1705.12.6
<input type="checkbox"/>	Other electrical equipment anchorage		X		1705.12.6
<input type="checkbox"/>	Piping systems / mechanical units designed to carry hazardous materials: installation and anchorage		X		1705.12.6
<input type="checkbox"/>	Ductwork designed to carry hazardous materials: installation and anchorage		X		1705.12.6
<input type="checkbox"/>	Vibration isolation systems: installation and anchorage		X		1705.12.6

<input type="checkbox"/>	SPECIAL CASES: Special Inspection is required. (1705.1.1)				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Construction materials and systems that are alternatives to materials and systems prescribed by code, not addressed in other sections. [Note to RDP: you must identify specifically what is to be inspected.]				1705.1.1
<input type="checkbox"/>	Unusual design applications of materials described in the code. [Note to RDP: you must identify specifically what is to be inspected.]				
<input type="checkbox"/>	Materials and systems required to be installed per additional manufacturer's instructions that prescribe requirements not contained in the code or in referenced standards. [Note to RDP: you must identify specifically]				

Category	Special Inspector Minimum Qualifications
<input type="checkbox"/> Reinforced Concrete	<input type="checkbox"/> Current ICC Reinforced Concrete Special Inspector or ACI Concrete Constr. Inspector <input type="checkbox"/> Concrete field testing by an ACI Concrete Field Testing Technical w/ Grade 1 cert. <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> NYS Registered Design Professional Engineer (RDP) with relevant experience
<input type="checkbox"/> Pre-Stressed Concrete	<u>Pretension Tendons</u> <input type="checkbox"/> Current ICC Reinforced Concrete certification and ACI Concrete Field Testing Technician with Grade 1 certification plus one year relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience <u>Post-tension Tendons</u> <input type="checkbox"/> Current Post-Tensioning Institute (PTI) certification <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Welding	<input type="checkbox"/> Current AWS Certified Welding Inspector <input type="checkbox"/> Current ICC Structural Steel and Welding Certificate plus one year of relevant experience <input type="checkbox"/> Current Level II cert. from American Society for Non-Destructive Testing (NDT) <input type="checkbox"/> Current NDT Level III provided previously certified as NDT Level II
<input type="checkbox"/> High-Strength Bolting & Steel Frame Inspection	<input type="checkbox"/> Current ICC Structural Steel and Welding certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Masonry	<input type="checkbox"/> Current ICC Structural Masonry certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Sprayed Fire-Resistant Materials	<input type="checkbox"/> Current ICC Spray-Applied Fireproofing certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Excavation and filling; verification of soils; piling & drilled piers; modular retaining walls	<input type="checkbox"/> Current Level II certification in geotechnical engineering technology/construction from the National Institute for Certification in Engineering Technologies (NICET) <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Inspection of Fabricators	<input type="checkbox"/> Precast: Current ICC Reinforced Concrete certification plus one year relevant exp <input type="checkbox"/> Bar Joist: see welding requirements <input type="checkbox"/> Metal Building: see welding requirements <input type="checkbox"/> Structural Steel: see welding requirements
<input type="checkbox"/> Seismic Items not addressed elsewhere	<input type="checkbox"/> Qualified person with one year of relevant experience <input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience
<input type="checkbox"/> Exterior Insulation and Finish System	<input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience
<input type="checkbox"/> Smoke Control	<input type="checkbox"/> Expertise in fire protection engineering, mechanical engineering and certified as an air balancer <input type="checkbox"/> The RDP responsible for design
<input type="checkbox"/> Fire-Resistant Penetrations & Joints, Special Cases	<input type="checkbox"/> Qualified person with one year of relevant experience <input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience

Contractor's Statement of Responsibility Form

SUCF Project No: _____

Project Title: _____

Contractor: _____

Contractor's Acknowledgement of Special Requirements

I hereby acknowledge that I have received, read and understand there are special requirements contained in the contract documents. I hereby acknowledge control will be exercised to obtain conformance with the contract documents.

As the Contractor, I will coordinate with the Special Inspector(s) in order to accommodate all inspections and tests as required. I will integrate all inspection activities as provided by the Special Inspector into the Project Schedule.

☐ **I understand if this box is checked, this project includes the construction of a seismic-force-resisting system and / or a wind-force-resisting system as noted on page 2 of the Statement of Special Inspections.**

(Print name / Signature / date)

Fabricator's Certificate of Compliance Form

SUCF Project No: _____

Project Title: _____

Contractor: _____

Fabricator: _____

Fabricated Item: *Structural, load-bearing or lateral load-resisting members of assemblies consisting of materials assembled prior to installation in a building or structure, or subject to operations such as heat treatment, thermal cutting, cold working or reforming after manufacture and prior to installation in a building or structure. Materials produced in accordance with standards referenced by this code, such as rolled structural steel shapes, steel reinforcing bars, masonry units and wood structural panels, or in accordance with a referenced standard that provides requirements for quality control done under the supervision of a third-party quality control agency, are not "fabricated items".*

In lieu of special inspections during fabrication, a fabricator shall provide with the initial shop drawings for consideration:

- The fabricator's written procedural and quality control manuals AND
- Documentation from the most recent audit of fabrication practices.

Date of Last Audit: _____

Company that conducted the Audit:

Contact Person: _____

Name: _____

Address: _____

For ease in evaluation, the Fabricator may attach copies of a Fabricator's Certification or a copy of the latest building code evaluation service report, if applicable.

Date of most recent Approval: _____ **Certification Number:** _____

Certificate issued by: Name: _____ Address: _____

Contact Person: _____

.....
Post Fabrication Certification:

Provide a description of the structural, load bearing or lateral load-resisting assemblies that have been fabricated:

I hereby certify the items described above were fabricated in strict accordance with the approved contract documents.

(Print Name / Signature)

(Print title)

Special Inspector / Approved Agency Final Report

SUCF Project No: _____

Project Title: _____

Contractor: _____

Special Inspector / Approved Agency: _____

We have completed the specified inspections and testing as identified in the Statement of Special Inspections dated _____. To the best of my information, knowledge and belief, the inspections we have completed have been performed and all discovered discrepancies have been reported to the Registered Design Professional in Responsible Charge.

All interim reports submitted prior to this Final Report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,

(Signature / date)

(Seal or Certification)

(Print name)

(Print title)

Statement of Special Inspections

SUCF Project No: 081058-00

Project Title: UPGRADE ELEVATORS CAMPUS WIDE AT SUNY NEW PALTZ
AT SOJOURNER TRUTH LIBRARY

Registered Design Professionals in Responsible Charge:

Architect: (Name) (Address)
MDSZERBATY ASSOCIATES ARCHITECTURE
307 SEVENTH AVENUE, SUITE 1501, NEW YORK, NY 10001

Structural Engineer: _____

Mechanical Engineer: IAQ SYSTEMS INC CONSULTING ENGINEERS
555 EIGHTH AVENUE, SUITE 1502, NEW YORK, NY 10018

- ✓ Identification of Seismic-Force Resisting Systems and Wind-Force-Resisting Systems
- ✓ Required Special Inspections and Frequencies
- ✓ Special Inspector Minimum Qualifications
- ✓ Contractor's Statement of Responsibility Form
- ✓ Fabricator's Certificate of Compliance Form (*only needed if there are fabricated items*)
- ✓ Special Inspector / Approved Agency Final Report

As the Registered Design Professional(s) in Responsible Charge for this project, I/we certify this Statement of Special Inspections includes a complete list of materials and work that require special inspection and testing and the minimum qualifications of the Special Inspectors / testing agencies required to be considered for conducting the inspections and testing. This represents the complete extent of special inspections and testing required during the construction of this project and complies with the NYS 2017 Uniform Fire Prevention and Building Code.



(Affix professional seal)

(Affix professional seal)

(Affix professional seal)

Arch.: MICHAEL D. SZERBATY Str. Eng.: _____ Mech. Eng.: SAI BARADE
(Print name / date) (Print name / date) (Print name / date)



(Signature)

(Signature)

(Signature)

Identification of Seismic-Force-Resisting Systems and Wind-Force-Resisting Systems

➤ **Seismic-Force-Resisting Systems:**

The Seismic Design Category (SDC) is Choose an item

There Choose an item seismic-force-resisting systems in this project.

There Choose an item designated seismic systems.

Additional Items for Seismic Design Categories B, C, D or F:

- ☐ Isolator units and energy dissipation devices.

Additional Items for Seismic Design Categories C, D, E or F:

- ☐ HVAC ducts designed to carry hazardous materials.
- ☐ Piping / mechanical units designed to carry hazardous materials.
- ☐ Electrical equipment used for emergency or standby power systems.
- ☐ Vibration isolation systems requiring 1/4" max between equipment support frames and restraint.

Additional items for Seismic Design Categories D, E or F:

- ☐ Exterior cladding, interior or exterior non-bearing walls >30 ft above grade or walking surfaces.
- ☐ Exterior cladding, interior or exterior non-bearing walls weighing >5 psf.
- ☐ Interior non-bearing walls weighing >15 psf.
- ☐ Access floors.
- ☐ Steel storage racks taller than 8 feet.
- ☐ Code-formed steel special bolted moment frames.

Additional items for Seismic Design Categories E or F:

- ☐ Electrical equipment.

➤ **Wind-Force-Resisting Systems:**

☐ Wind Category B, wind speed minimum 120 MPH.

☐ Wind Category C or D, wind speed minimum 110 MPH.

Design includes wind-force-resisting systems and components:

- ☐ Roof covering, roof deck and roof framing connections.
- ☐ Exterior wall covering and wall connections to roof and floor diaphragms and framing.
- ☐ Cold-formed steel light-frame construction
- ☐ Structural wood

Required Special Inspections, Tests, Frequencies

<input type="checkbox"/>	STEEL CONSTRUCTION: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Minimum inspections prior to welding.	X		AISC 360 Table N5.4-1	1705.2.1
<input type="checkbox"/>	Minimum inspections during welding.	X		AISC 360 Table N5.4-2	
<input type="checkbox"/>	Minimum inspections after welding.		X	AISC 360 Table N5.4-3	
<input type="checkbox"/>	UT shall be performed on CJP groove welds subject to transversely applied tension loading in butt, T-, and Corner joints. a. For Risk Category III or IV structures b. For Risk Category II structures		X 100% X 10%	AISC 360 N5.5b	
<input type="checkbox"/>	Minimum inspections prior to high-strength bolting (except for snug-tight joints).	X		AISC 360 Table N5.6-1	
<input type="checkbox"/>	Minimum inspections during high-strength bolting (except for snug-tight joints). For pretension/slip-critical joints: a. Turn-of-nut with match marking, direct-tension-indicator method, twist-off-type tension control bolt method. b. Calibrated wrench method, turn-of-nut method without matchmaking.	X	X	AISC 360 Table N5.6-2	
<input type="checkbox"/>	Minimum inspections after high-strength bolting.		X	AISC 360 Table N5.6-3	
<input type="checkbox"/>	Inspect fabricated or erected steel as appropriate to verify compliance with the construction drawings. Inspect braces, stiffeners, member locations, and joint details.		X	AISC 360 N5.7	
<input type="checkbox"/>	Inspect during placement of anchor rods and other embedments supporting structural steel for compliance with the construction dwgs.	X		AISC 360 N5.7	
<input type="checkbox"/>	Inspect welding of steel headed stud anchors.	X		AISC 360 N6 AWS D1.1/D1.1M	
<input type="checkbox"/>	Verification for metal deck: a. Welding consumables, welding procedure specs, welder's qualifications prior to work, observation of work in progress, and visual inspection of all welds. b. Fasteners to be used prior to work, observation of work in progress to confirm conformance to manufacturer's recommendations, and visual inspection of completed installation.	X X		AISC 360 N6	

<input type="checkbox"/>	COLD-FORMED STEEL DECK: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Deck Placement		X	SDI QA/QC Table 1.1	1705.2.2
<input type="checkbox"/>	Inspection or Execution Tasks After to Deck Placement		X	SDI QA/QC Table 1.2	
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Welding		X	SDI QA/QC Table 1.3	
<input type="checkbox"/>	Inspection or Execution Tasks During Welding	X		SDI QA/QC Table 1.4	
<input type="checkbox"/>	Inspection or Execution Tasks After to Welding		X	SDI QA/QC Table 1.5	
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Mechanical Fastening		X	SDI QA/QC Table 1.6	
<input type="checkbox"/>	Inspection or Execution Tasks During to Mechanical Fastening	X		SDI QA/QC Table 1.7	
<input type="checkbox"/>	Inspection or Execution Tasks After to Mechanical Fastening		X	SDI QA/QC Table 1.8	

<input type="checkbox"/>	OPEN-WEB STEEL JOISTS AND /OR JOIST GIRDERS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
	Installation of open-web steel joists and joist girders.				Table 1705.2.3
<input type="checkbox"/>	End connections – welding or bolted	-	X	SJI CJ,SJI K SJI LH/DLH OR SJI JG	
<input type="checkbox"/>	Bridging – horizontal or diagonal a. Standard bridging b. Bridging that differs from the SJI specifications.	-	X	SJI CJ,SJI K SJI LH/DLH OR SJI JG	

<input type="checkbox"/>	COLD-FORMED STEEL TRUSSES SPANNING 60 FT OR GREATER: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify the temporary installation of restraint / bracing is installed per the approved truss submittal package.		X		1705.2.4
<input type="checkbox"/>	Verify the permanent individual truss member restraint / ricing is installed per the approved truss submittal package.		X		

<input type="checkbox"/>	CONCRETE CONSTRUCTION: Special Inspection and Testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect reinforcement, including restressing tendons, and verify placement.	-	X	ACI 318 Ch. 20, 25.2, 25.3, 26.5.1- 26.5.3	1908.4
<input type="checkbox"/>	Reinforcing bar welding: a. Verify weldability of reinforcing bars other than ASTM A706; b. Inspect single-pass fillet welds, maximum 5/16"; and c. Inspect all other welds	X	X X	AWS D1.4 ACI 318:26.5.4	
<input type="checkbox"/>	Inspect anchors cast in concrete.	-	X	ACI 318:17.8.2	-
<input type="checkbox"/>	Inspect anchors post-installed in hardened concrete members. a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads. b. Mechanical and adhesive anchors not defined in 4.a.	X	X	ACI 318: 7.8.2.4 ACI 318: 17.8.2	Table 1705.3 footnote 'b'.
<input type="checkbox"/>	Verify use of required design mix.	-	X	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
<input type="checkbox"/>	Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	-	ASTM C172 ASTM C31 ACI 318: 26.4.5,26.12	1908.10
<input type="checkbox"/>	Inspect concrete and shotcrete placement for proper application techniques.	X	-	ACI 318: 26.4.5	1908.6, .7, and .8
<input type="checkbox"/>	Verify maintenance of specified curing temperature and techniques.	-	X	ACI 318: 26.4.7- 26.4.9	1908.9
<input type="checkbox"/>	Inspect pre-stressed concrete for: a. Application of pre-stressing forces; and b. Grouting of bonded pre-stressing tendons	X X	- -	ACI 318: 6.9.2.1 ACI 318: 6.9.2.3	
<input type="checkbox"/>	Inspect erection of precast concrete members.	-	X	ACI 318: 6.8	-
<input type="checkbox"/>	Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	-	X	ACI 318: 26.10.2	-
<input type="checkbox"/>	Inspect formwork for shape, location and dimensions of the concrete member being formed.	-	X	ACI 318: 26.10.1(b)	-

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level A – For Risk Category I, II, or III, designed using Prescriptive or Empirical design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify certificates of compliance prior to construction.		X	TMS 402, TMS 602 Table 3.1.1	1705.4

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level B – For Risk Category I, II, or III, designed using Engineered design methods, or Risk Category IV designed using Prescriptive design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verification of Slump flow and Visual Stability Index (VSI) as delivered to the project site in accordance with Specification Article 1.5 B.1.b.3 for self-consolidating grout.	X	X	TMS 402 Table 3.1.2	1705.4
<input type="checkbox"/>	Verification of f'_m and f'_{AAC} in accordance with Specification Article 1.4B prior to construction, except where specifically exempted by TMS 402.		X	TMS 402 Table 3.1.2	
<input type="checkbox"/>	Verify compliance with the approved submittals.		X	TMS 602 Art 1.5	
<input type="checkbox"/>	As masonry construction begins, verify the following are in compliance:				
<input type="checkbox"/>	Proportions of site-prepared mortar		X	TMS 602 Art 2.1, 2.6A	
<input type="checkbox"/>	Construction of mortar joints		X	TMS 602 Art 3.3B	
<input type="checkbox"/>	Grade and size of prestressing tendons and anchorages		X	TMS 602 Art 2.4B, 2.4H	
<input type="checkbox"/>	Location of reinforcement, connectors and prestressing tendons and anchorages		X	TMS 602 Art 3.4, 3.6A	
<input type="checkbox"/>	Prestressing technique		X	TMS 602 Art 3.6B	
<input type="checkbox"/>	Properties of thin-set mortar for AAC masonry	X	X	TMS 602 Art 2.1C	
<input type="checkbox"/>	Prior to grouting, verify that the following are in compliance:				
<input type="checkbox"/>	Grout space		X	TMS 602 Art 3.2D, 3.2F	
<input type="checkbox"/>	Grade, type and size of reinforcement and anchor bolts, and prestressing tendons and anchorages		X	TMS 402 Sec 6.1 TMS 602 Art 2.4, 3.4	
<input type="checkbox"/>	Placement of reinforcements, connectors and prestressing tendons and anchorages		X	TMS 402 Sec 6.1, 6.2.1, 6.2.6, 6.2.7 TMS 602 Art 3.2E, 3.4, 3.6A	
<input type="checkbox"/>	Proportions of site-prepared grout and prestressing grout for bonded tendon		X	TMS 602 Art 2.6B, 2.4G.1.b	
<input type="checkbox"/>	Construction of mortar joints.		X	TMS 602 Art 3.3B	

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level C – For Risk Category IV designed using Engineered design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verification of f'_m and f'_{AAC} in accordance with Specification Article 1.4B prior to construction and for every 5,000 sq. ft. during construction.	X	X	TMS 402 Table 3.1.3	1705.4
<input type="checkbox"/>	Verification of proportions of materials in premixed or preblended mortar prestressing grout, and grout other than self-consolidating grout, as delivered to the project site.	X	X	TMS 402 Table 3.1.3	
<input type="checkbox"/>	Verification of Slump flow and Visual Stability Index (VSI) as delivered to the project site in accordance with Specification Article 1.5 B.1.b.3 for self-consolidating grout.	X	X	TMS 402 Table 3.1.3	
<input type="checkbox"/>	Verify compliance with the approved submittals.		X	TMS 602 Art 1.5	
<input type="checkbox"/>	Verify that the following are in compliance:				
<input type="checkbox"/>	Proportions of site-mixed mortar, grout and prestressing grout for bonded tendons.		X	TMS 602 Art 2.1, 2.6A, 2.6B, 2.6C, 2.4G.1.b	
<input type="checkbox"/>	Grade, type, and size of reinforcement and anchor bolts, and prestressing tendons and anchorages		X	TMS 402 Sec 6.1, TMS 602 Art 2.4, 3.4	
<input type="checkbox"/>	Placement of masonry units and construction of mortar joints.		X	TMS 602 Art 3.3B	
<input type="checkbox"/>	Placement of reinforcement, connectors and prestressing tendons and anchorages	X		TMS 402 Sec 6.1, 6.2.1, 6.2.6, 6.2.7 TMS 602 Art 3.2E, 3.4, 3.6A	
<input type="checkbox"/>	Grout space prior to grouting	X		TMS 602 Art 3.2D, 3.2F	
<input type="checkbox"/>	Placement of grout and prestressing grout for bonding tendons.	X		TMS 602 Art 3.5, 3.6C	
<input type="checkbox"/>	Size and location of structural elements		X	TMS 602 Art 3.3F	
<input type="checkbox"/>	Type, size and location of anchors including other details of anchorage of masonry to structural members, frames or other construction.	X		TMS 402 Sec 1.2.1(e), 6.1.4.3, 6.2.1	
<input type="checkbox"/>	Welding of reinforcement	X		TMS 402 Sec 8.1.6.7.2, 9.3.3.4(c), 11.3.3.4(b)	
<input type="checkbox"/>	Preparation, construction and protection of masonry during code weather (temperature below 40 degrees F) or hot weather (temperature above 90 degrees F)		X	TMS 602 Art 1.8C, 1.8D	
<input type="checkbox"/>	Application and measurement of prestressing force	X		TMS 602 Art 3.6B	
<input type="checkbox"/>	Placement of AAC masonry units and construction of thin-bed mortar joints	X		TMS 602 Art 3.3B.9, 3.3F.1.b	
<input type="checkbox"/>	Properties of thin-bed mortar for AAC masonry	X		TMS 602 Art 2.1 C.1	
<input type="checkbox"/>	Observe preparation of grout specimens, mortar specimens and / or prisms.	X		TMS 602 Art 1.4B.2.a.3, 1.4B.2.b.3, 1.4B.2.c.3, 1.4B.3, 1.4B.4	

<input type="checkbox"/>	WOOD CONSTRUCTION: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect high-load diaphragms for grade/thickness of sheathing, nominal size of members, fastener size, number and spacing.		X	Contr. docs	1705.5.1, 2306.2
<input type="checkbox"/>	Metal-plate-connected wood trusses spanning 60 feet or greater: temporary installation restraint / bracing and permanent individual truss member restraint / bracing.		X	App. truss submittal package	1705.5.2

<input type="checkbox"/>	SOILS: Special Inspection and Testing are required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	-	X	Geotech Report, Contract Docs	Table 1705.6
<input type="checkbox"/>	Verify excavations are extended to proper depth and have reached proper material.	-	X		
<input type="checkbox"/>	Perform classification and testing of compacted fill materials.				
<input type="checkbox"/>	Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	X	-		
<input type="checkbox"/>	Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.	-	X		
<input type="checkbox"/>	During fill placement inspector shall verify that proper materials and procedures.	X			

<input type="checkbox"/>	DRIVEN DEEP FOUNDATION ELEMENTS: Special Inspection and Testing are required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify element materials, sizes and lengths comply with the requirements.	X	-	Geotech Report, Contract Docs	Table 1705.7
<input type="checkbox"/>	Determine capacities of test elements and conduct additional load tests, as required.	X	-		
<input type="checkbox"/>	Inspect driving operations and maintain complete and accurate records for each element.	X	-		
<input type="checkbox"/>	Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element.	X	-		
<input type="checkbox"/>	For steel elements, perform additional special inspections in accordance with Section 1705.2. (See Special Inspections for Concrete Construction.)	-	-		
<input type="checkbox"/>	For concrete elements and concrete-filled elements, perform tests and additional special inspections in accordance with Section 1705.3. (See Special Inspections for Concrete Construction)	-	-		
<input type="checkbox"/>	If applicable, RDP to identify: specialty elements, additional insp.	-	-		

<input type="checkbox"/>	CAST-IN-PLACE DEEP FOUNDATION ELEMENTS: Special Inspection and Testing is required.				
	Type	Continu- ous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect drilling operations and maintain complete and accurate records for each element.	X	-	Geotech Report, Contract Docs	Table 1705.8
<input type="checkbox"/>	Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end-bearing strata capacity. Record concrete or grout volumes.	X	-		
<input type="checkbox"/>	For concrete elements, perform tests and additional special inspections in accordance with Section 1705.3. (See Special Inspections for Concrete Construction)	-	-		

<input type="checkbox"/>	HELICAL PILE FOUNDATIONS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Installation equipment used, pile dimensions, tip elevations, final depth, final installation torque [and any other information required by the RDP] shall be recorded.	X		Geotech Rept, Contr. Docs	1705.9

<input type="checkbox"/>	SPRAYED FIRE-RESISTANT MATERIALS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify surface preparation in accordance with manufacturer's written instructions				1705.14.2
<input type="checkbox"/>	Verify temperature and area ventilation before and after application in accordance with manufacturer's written instructions.				1705.14.3
<input type="checkbox"/>	Verify thickness of sprayed fire resistant materials. a. Minimum of 4 measurements per 1,000 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E605	1705.14.4
<input type="checkbox"/>	b. Minimum of 25% of structural members at each story.				
<input type="checkbox"/>	Verify density of sprayed fire resistant materials. a. Minimum of one sample per 2,500 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E605	1705.14.5
<input type="checkbox"/>	b. Minimum of one sample from each type of structural framing member per 2,500 SF of floor area or part thereof at each story				
<input type="checkbox"/>	Verify cohesive/adhesive bond strength of sprayed fire resistant materials. a. Minimum of one sample per 2,500 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E736	1705.14.6
<input type="checkbox"/>	b. Minimum of one sample from each type of structural framing member per 2,500 SF of floor area or part thereof at each story				
<input type="checkbox"/>	c. Bond tests to qualify a primer, paint, or encapsulant when acceptable bond strength performance between these coatings and the fire resistant material has not been determined.				
<input type="checkbox"/>	Condition of finished application.				1705.14.1

<input type="checkbox"/>	MASTIC AND INTUMESCENT FIRE-RESISTANT COATINGS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify surface preparation, application, and thickness in accordance with manufacturer's written instructions when applied to structural elements and decks.			AWCI 12-B	1705.15

<input type="checkbox"/>	EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS): Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Water-resistive barrier coatings must be inspected when installed over a sheathing substrate.			ASTM E2570	1705.16.1
<input type="checkbox"/>	EIFS applications not over a water-resistive barrier, masonry, or concrete.				1705.16

<input checked="" type="checkbox"/>	FIRE-RESISTANT PENETRATIONS AND JOINTS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input checked="" type="checkbox"/>	For high-rise buildings or Risk Category III or IV buildings inspect through-penetrations and membrane penetration firestops.			ASTM E2174, ASTM E814, UL 1479	1705.17, 714.3.1.2 714.4.2
<input checked="" type="checkbox"/>	For high-rise buildings or Risk Category III or IV buildings inspect fire-resistant joint systems and perimeter fire barrier systems.			ASTM: E119, E2393, E1966, E2307, UL 2079	1705.17, 715.3, 715.4

<input type="checkbox"/>	SMOKE CONTROL SYSTEM: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Smoke control systems are to be tested during erection of ductwork and prior to concealment for leakage testing and recording of device location.		X		1705.18.1
<input type="checkbox"/>	Smoke control systems are to be tested prior to occupancy and after sufficient completion of pressure difference testing, flow measurements and detection and control verification.		X		

<input type="checkbox"/>	FABRICATED ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	The RDP shall identify any structural, load-bearing or lateral load-resisting members or assemblies that are specified to be fabricated off site i.e. in a fabricator's shop. Special inspections shall be required for these items unless: a. The fabricator maintains approved detailed fabrication and quality control procedures that provide conformance to the approved construction documents and IBC 2015. b. The fabricator is registered and approved per 1704.2.5.1. See also the Fabricator Form in this packet for these items.				1704.2.5
<input type="checkbox"/>	If the members or assemblies are to be fabricated on site, refer to their respective categories.				

<input type="checkbox"/>	WIND-FORCE-RESISTANT ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Structural wood	X	X		1705.11.1
<input type="checkbox"/>	Cold-formed steel light-frame construction		X		1705.11.2
<input type="checkbox"/>	Components: Roof covering, roof deck and roof framing connections		X		1705.11.3
<input type="checkbox"/>	Components: Exterior wall covering and wall connections to roof and floor diaphragms and framing.		X		1705.11.3

<input type="checkbox"/>	SEISMIC-FORCE RESISTANT ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Structural steel			AISC 341	1705.12.1.1 1705.13.1.1 1705.13.1.3
<input type="checkbox"/>	Structural steel elements			AISC 341	1705.12.1.2 1905.13.1.2
<input type="checkbox"/>	Structural wood	X	X		1705.12.2
<input type="checkbox"/>	Cold-formed steel light-frame construction				1705.12.3
<input type="checkbox"/>	Designated seismic systems			ASCE 7: 13.2.2	1705.12.4, 1705.13.4
<input type="checkbox"/>	Arch. components: Ext.cladding, interior or exterior nonbearing walls and interior or ext veneer 30 ft or less above grade or walking surface.		X		1705.12.5
<input type="checkbox"/>	Arch. components: Exterior cladding or interior or exterior veneer weighing 5 psf or less.		X		1705.12.5
<input type="checkbox"/>	Arch. components: Interior nonbearing walls weighing 15 psf or less.		X		1705.12.5
<input type="checkbox"/>	Architectural components: Access floors		X		1705.12.5.1
<input type="checkbox"/>	Elect. Equip. anchorage for emergency and standby power systems		X		1705.12.6
<input type="checkbox"/>	Other electrical equipment anchorage		X		1705.12.6
<input type="checkbox"/>	Piping systems / mechanical units designed to carry hazardous materials: installation and anchorage		X		1705.12.6
<input type="checkbox"/>	Ductwork designed to carry hazardous materials: installation and anchorage		X		1705.12.6
<input type="checkbox"/>	Vibration isolation systems: installation and anchorage		X		1705.12.6

<input type="checkbox"/>	SPECIAL CASES: Special Inspection is required. (1705.1.1)				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Construction materials and systems that are alternatives to materials and systems prescribed by code, not addressed in other sections. [Note to RDP: you must identify specifically what is to be inspected.]				1705.1.1
<input type="checkbox"/>	Unusual design applications of materials described in the code. [Note to RDP: you must identify specifically what is to be inspected.]				
<input type="checkbox"/>	Materials and systems required to be installed per additional manufacturer's instructions that prescribe requirements not contained in the code or in referenced standards. [Note to RDP: you must identify specifically]				

Category	Special Inspector Minimum Qualifications
<input type="checkbox"/> Reinforced Concrete	<input type="checkbox"/> Current ICC Reinforced Concrete Special Inspector or ACI Concrete Constr. Inspector <input type="checkbox"/> Concrete field testing by an ACI Concrete Field Testing Technical w/ Grade 1 cert. <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> NYS Registered Design Professional Engineer (RDP) with relevant experience
<input type="checkbox"/> Pre-Stressed Concrete	<u>Pretension Tendons</u> <input type="checkbox"/> Current ICC Reinforced Concrete certification and ACI Concrete Field Testing Technician with Grade 1 certification plus one year relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience <u>Post-tension Tendons</u> <input type="checkbox"/> Current Post-Tensioning Institute (PTI) certification <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Welding	<input type="checkbox"/> Current AWS Certified Welding Inspector <input type="checkbox"/> Current ICC Structural Steel and Welding Certificate plus one year of relevant experience <input type="checkbox"/> Current Level II cert. from American Society for Non-Destructive Testing (NDT) <input type="checkbox"/> Current NDT Level III provided previously certified as NDT Level II
<input type="checkbox"/> High-Strength Bolting & Steel Frame Inspection	<input type="checkbox"/> Current ICC Structural Steel and Welding certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Masonry	<input type="checkbox"/> Current ICC Structural Masonry certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Sprayed Fire-Resistant Materials	<input type="checkbox"/> Current ICC Spray-Applied Fireproofing certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Excavation and filling; verification of soils; piling & drilled piers; modular retaining walls	<input type="checkbox"/> Current Level II certification in geotechnical engineering technology/construction from the National Institute for Certification in Engineering Technologies (NICET) <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Inspection of Fabricators	<input type="checkbox"/> Precast: Current ICC Reinforced Concrete certification plus one year relevant exp <input type="checkbox"/> Bar Joist: see welding requirements <input type="checkbox"/> Metal Building: see welding requirements <input type="checkbox"/> Structural Steel: see welding requirements
<input type="checkbox"/> Seismic Items not addressed elsewhere	<input type="checkbox"/> Qualified person with one year of relevant experience <input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience
<input type="checkbox"/> Exterior Insulation and Finish System	<input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience
<input type="checkbox"/> Smoke Control	<input type="checkbox"/> Expertise in fire protection engineering, mechanical engineering and certified as an air balancer <input type="checkbox"/> The RDP responsible for design
<input type="checkbox"/> Fire-Resistant Penetrations & Joints, Special Cases	<input type="checkbox"/> Qualified person with one year of relevant experience <input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience

Contractor's Statement of Responsibility Form

SUCF Project No: _____

Project Title: _____

Contractor: _____

Contractor's Acknowledgement of Special Requirements

I hereby acknowledge that I have received, read and understand there are special requirements contained in the contract documents. I hereby acknowledge control will be exercised to obtain conformance with the contract documents.

As the Contractor, I will coordinate with the Special Inspector(s) in order to accommodate all inspections and tests as required. I will integrate all inspection activities as provided by the Special Inspector into the Project Schedule.

☐ **I understand if this box is checked, this project includes the construction of a seismic-force-resisting system and / or a wind-force-resisting system as noted on page 2 of the Statement of Special Inspections.**

(Print name / Signature / date)

Fabricator's Certificate of Compliance Form

SUCF Project No: _____

Project Title: _____

Contractor: _____

Fabricator: _____

Fabricated Item: *Structural, load-bearing or lateral load-resisting members of assemblies consisting of materials assembled prior to installation in a building or structure, or subject to operations such as heat treatment, thermal cutting, cold working or reforming after manufacture and prior to installation in a building or structure. Materials produced in accordance with standards referenced by this code, such as rolled structural steel shapes, steel reinforcing bars, masonry units and wood structural panels, or in accordance with a referenced standard that provides requirements for quality control done under the supervision of a third-party quality control agency, are not "fabricated items".*

In lieu of special inspections during fabrication, a fabricator shall provide with the initial shop drawings for consideration:

- The fabricator's written procedural and quality control manuals AND
- Documentation from the most recent audit of fabrication practices.

Date of Last Audit: _____

Company that conducted the Audit:

Contact Person: _____

Name: _____

Address: _____

For ease in evaluation, the Fabricator may attach copies of a Fabricator's Certification or a copy of the latest building code evaluation service report, if applicable.

Date of most recent Approval: _____ **Certification Number:** _____

Certificate issued by: Name: _____ Address: _____

Contact Person: _____

.....
Post Fabrication Certification:

Provide a description of the structural, load bearing or lateral load-resisting assemblies that have been fabricated:

I hereby certify the items described above were fabricated in strict accordance with the approved contract documents.

(Print Name / Signature)

(Print title)

Special Inspector / Approved Agency Final Report

SUCF Project No: _____

Project Title: _____

Contractor: _____

Special Inspector / Approved Agency: _____

We have completed the specified inspections and testing as identified in the Statement of Special Inspections dated _____. To the best of my information, knowledge and belief, the inspections we have completed have been performed and all discovered discrepancies have been reported to the Registered Design Professional in Responsible Charge.

All interim reports submitted prior to this Final Report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,

(Signature / date)

(Seal or Certification)

(Print name)

(Print title)

Statement of Special Inspections

SUCF Project No: 081058-00

Project Title: UPGRADE ELEVATORS CAMPUS WIDE AT SUNY NEW PALTZ
AT STUDENT UNION BUILDING

Registered Design Professionals in Responsible Charge:

Architect: (Name) (Address)
MDSZERBATY ASSOCIATES ARCHITECTURE
307 SEVENTH AVENUE, SUITE 1501, NEW YORK, NY 10001

Structural Engineer: _____

Mechanical Engineer: IAQ SYSTEMS INC CONSULTING ENGINEERS
555 EIGHTH AVENUE, SUITE 1502, NEW YORK, NY 10018

- ✓ Identification of Seismic-Force Resisting Systems and Wind-Force-Resisting Systems
- ✓ Required Special Inspections and Frequencies
- ✓ Special Inspector Minimum Qualifications
- ✓ Contractor's Statement of Responsibility Form
- ✓ Fabricator's Certificate of Compliance Form (*only needed if there are fabricated items*)
- ✓ Special Inspector / Approved Agency Final Report

As the Registered Design Professional(s) in Responsible Charge for this project, I/we certify this Statement of Special Inspections includes a complete list of materials and work that require special inspection and testing and the minimum qualifications of the Special Inspectors / testing agencies required to be considered for conducting the inspections and testing. This represents the complete extent of special inspections and testing required during the construction of this project and complies with the NYS 2017 Uniform Fire Prevention and Building Code.



(Affix professional seal)

(Affix professional seal)

(Affix professional seal)

Arch.: MICHAEL D. SZERBATY Str. Eng.: _____ Mech. Eng.: SAI BARADE
(Print name / date) (Print name / date) (Print name / date)

Michael D. Szerbaty
(Signature)

(Signature)

(Signature)

Identification of Seismic-Force-Resisting Systems and Wind-Force-Resisting Systems

➤ **Seismic-Force-Resisting Systems:**

The Seismic Design Category (SDC) is Choose an item

There Choose an item seismic-force-resisting systems in this project.

There Choose an item designated seismic systems.

Additional Items for Seismic Design Categories B, C, D or F:

- ☐ Isolator units and energy dissipation devices.

Additional Items for Seismic Design Categories C, D, E or F:

- ☐ HVAC ducts designed to carry hazardous materials.
- ☐ Piping / mechanical units designed to carry hazardous materials.
- ☐ Electrical equipment used for emergency or standby power systems.
- ☐ Vibration isolation systems requiring 1/4" max between equipment support frames and restraint.

Additional items for Seismic Design Categories D, E or F:

- ☐ Exterior cladding, interior or exterior non-bearing walls >30 ft above grade or walking surfaces.
- ☐ Exterior cladding, interior or exterior non-bearing walls weighing >5 psf.
- ☐ Interior non-bearing walls weighing >15 psf.
- ☐ Access floors.
- ☐ Steel storage racks taller than 8 feet.
- ☐ Code-formed steel special bolted moment frames.

Additional items for Seismic Design Categories E or F:

- ☐ Electrical equipment.

➤ **Wind-Force-Resisting Systems:**

☐ Wind Category B, wind speed minimum 120 MPH.

☐ Wind Category C or D, wind speed minimum 110 MPH.

Design includes wind-force-resisting systems and components:

- ☐ Roof covering, roof deck and roof framing connections.
- ☐ Exterior wall covering and wall connections to roof and floor diaphragms and framing.
- ☐ Cold-formed steel light-frame construction
- ☐ Structural wood

Required Special Inspections, Tests, Frequencies

<input type="checkbox"/>	STEEL CONSTRUCTION: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Minimum inspections prior to welding.	X		AISC 360 Table N5.4-1	1705.2.1
<input type="checkbox"/>	Minimum inspections during welding.	X		AISC 360 Table N5.4-2	
<input type="checkbox"/>	Minimum inspections after welding.		X	AISC 360 Table N5.4-3	
<input type="checkbox"/>	UT shall be performed on CJP groove welds subject to transversely applied tension loading in butt, T-, and Corner joints. a. For Risk Category III or IV structures b. For Risk Category II structures		X 100% X 10%	AISC 360 N5.5b	
<input type="checkbox"/>	Minimum inspections prior to high-strength bolting (except for snug-tight joints).	X		AISC 360 Table N5.6-1	
<input type="checkbox"/>	Minimum inspections during high-strength bolting (except for snug-tight joints). For pretension/slip-critical joints: a. Turn-of-nut with match marking, direct-tension-indicator method, twist-off-type tension control bolt method. b. Calibrated wrench method, turn-of-nut method without matchmaking.	X	X	AISC 360 Table N5.6-2	
<input type="checkbox"/>	Minimum inspections after high-strength bolting.		X	AISC 360 Table N5.6-3	
<input type="checkbox"/>	Inspect fabricated or erected steel as appropriate to verify compliance with the construction drawings. Inspect braces, stiffeners, member locations, and joint details.		X	AISC 360 N5.7	
<input type="checkbox"/>	Inspect during placement of anchor rods and other embedments supporting structural steel for compliance with the construction dwgs.	X		AISC 360 N5.7	
<input type="checkbox"/>	Inspect welding of steel headed stud anchors.	X		AISC 360 N6 AWS D1.1/D1.1M	
<input type="checkbox"/>	Verification for metal deck: a. Welding consumables, welding procedure specs, welder's qualifications prior to work, observation of work in progress, and visual inspection of all welds. b. Fasteners to be used prior to work, observation of work in progress to confirm conformance to manufacturer's recommendations, and visual inspection of completed installation.	X X		AISC 360 N6	

<input type="checkbox"/>	COLD-FORMED STEEL DECK: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Deck Placement		X	SDI QA/QC Table 1.1	1705.2.2
<input type="checkbox"/>	Inspection or Execution Tasks After to Deck Placement		X	SDI QA/QC Table 1.2	
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Welding		X	SDI QA/QC Table 1.3	
<input type="checkbox"/>	Inspection or Execution Tasks During Welding	X		SDI QA/QC Table 1.4	
<input type="checkbox"/>	Inspection or Execution Tasks After to Welding		X	SDI QA/QC Table 1.5	
<input type="checkbox"/>	Inspection or Execution Tasks Prior to Mechanical Fastening		X	SDI QA/QC Table 1.6	
<input type="checkbox"/>	Inspection or Execution Tasks During to Mechanical Fastening	X		SDI QA/QC Table 1.7	
<input type="checkbox"/>	Inspection or Execution Tasks After to Mechanical Fastening		X	SDI QA/QC Table 1.8	

<input type="checkbox"/>	OPEN-WEB STEEL JOISTS AND /OR JOIST GIRDERS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
	Installation of open-web steel joists and joist girders.				Table 1705.2.3
<input type="checkbox"/>	End connections – welding or bolted	-	X	SJI CJ,SJI K SJI LH/DLH OR SJI JG	
<input type="checkbox"/>	Bridging – horizontal or diagonal a. Standard bridging b. Bridging that differs from the SJI specifications.	-	X	SJI CJ,SJI K SJI LH/DLH OR SJI JG	

<input type="checkbox"/>	COLD-FORMED STEEL TRUSSES SPANNING 60 FT OR GREATER: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify the temporary installation of restraint / bracing is installed per the approved truss submittal package.		X		1705.2.4
<input type="checkbox"/>	Verify the permanent individual truss member restraint / ricing is installed per the approved truss submittal package.		X		

<input type="checkbox"/>	CONCRETE CONSTRUCTION: Special Inspection and Testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect reinforcement, including restressing tendons, and verify placement.	-	X	ACI 318 Ch. 20, 25.2, 25.3, 26.5.1- 26.5.3	1908.4
<input type="checkbox"/>	Reinforcing bar welding: a. Verify weldability of reinforcing bars other than ASTM A706; b. Inspect single-pass fillet welds, maximum 5/16"; and c. Inspect all other welds	X	X X	AWS D1.4 ACI 318:26.5.4	
<input type="checkbox"/>	Inspect anchors cast in concrete.	-	X	ACI 318:17.8.2	-
<input type="checkbox"/>	Inspect anchors post-installed in hardened concrete members. a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads. b. Mechanical and adhesive anchors not defined in 4.a.	X	X	ACI 318: 7.8.2.4 ACI 318: 17.8.2	Table 1705.3 footnote 'b'.
<input type="checkbox"/>	Verify use of required design mix.	-	X	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
<input type="checkbox"/>	Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	-	ASTM C172 ASTM C31 ACI 318: 26.4.5,26.12	1908.10
<input type="checkbox"/>	Inspect concrete and shotcrete placement for proper application techniques.	X	-	ACI 318: 26.4.5	1908.6, .7, and .8
<input type="checkbox"/>	Verify maintenance of specified curing temperature and techniques.	-	X	ACI 318: 26.4.7- 26.4.9	1908.9
<input type="checkbox"/>	Inspect pre-stressed concrete for: a. Application of pre-stressing forces; and b. Grouting of bonded pre-stressing tendons	X X	- -	ACI 318: 6.9.2.1 ACI 318: 6.9.2.3	
<input type="checkbox"/>	Inspect erection of precast concrete members.	-	X	ACI 318: 6.8	-
<input type="checkbox"/>	Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	-	X	ACI 318: 26.10.2	-
<input type="checkbox"/>	Inspect formwork for shape, location and dimensions of the concrete member being formed.	-	X	ACI 318: 26.10.1(b)	-

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level A – For Risk Category I, II, or III, designed using Prescriptive or Empirical design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify certificates of compliance prior to construction.		X	TMS 402, TMS 602 Table 3.1.1	1705.4

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level B – For Risk Category I, II, or III, designed using Engineered design methods, or Risk Category IV designed using Prescriptive design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verification of Slump flow and Visual Stability Index (VSI) as delivered to the project site in accordance with Specification Article 1.5 B.1.b.3 for self-consolidating grout.	X	X	TMS 402 Table 3.1.2	1705.4
<input type="checkbox"/>	Verification of f'_m and f'_{AAC} in accordance with Specification Article 1.4B prior to construction, except where specifically exempted by TMS 402.		X	TMS 402 Table 3.1.2	
<input type="checkbox"/>	Verify compliance with the approved submittals.		X	TMS 602 Art 1.5	
<input type="checkbox"/>	As masonry construction begins, verify the following are in compliance:				
<input type="checkbox"/>	Proportions of site-prepared mortar		X	TMS 602 Art 2.1, 2.6A	
<input type="checkbox"/>	Construction of mortar joints		X	TMS 602 Art 3.3B	
<input type="checkbox"/>	Grade and size of prestressing tendons and anchorages		X	TMS 602 Art 2.4B, 2.4H	
<input type="checkbox"/>	Location of reinforcement, connectors and prestressing tendons and anchorages		X	TMS 602 Art 3.4, 3.6A	
<input type="checkbox"/>	Prestressing technique		X	TMS 602 Art 3.6B	
<input type="checkbox"/>	Properties of thin-set mortar for AAC masonry	X	X	TMS 602 Art 2.1C	
<input type="checkbox"/>	Prior to grouting, verify that the following are in compliance:				
<input type="checkbox"/>	Grout space		X	TMS 602 Art 3.2D, 3.2F	
<input type="checkbox"/>	Grade, type and size of reinforcement and anchor bolts, and prestressing tendons and anchorages		X	TMS 402 Sec 6.1 TMS 602 Art 2.4, 3.4	
<input type="checkbox"/>	Placement of reinforcements, connectors and prestressing tendons and anchorages		X	TMS 402 Sec 6.1, 6.2.1, 6.2.6, 6.2.7 TMS 602 Art 3.2E, 3.4, 3.6A	
<input type="checkbox"/>	Proportions of site-prepared grout and prestressing grout for bonded tendon		X	TMS 602 Art 2.6B, 2.4G.1.b	
<input type="checkbox"/>	Construction of mortar joints.		X	TMS 602 Art 3.3B	

<input type="checkbox"/>	MASONRY CONSTRUCTION: Level C – For Risk Category IV designed using Engineered design methods. Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verification of f'_m and f'_{AAC} in accordance with Specification Article 1.4B prior to construction and for every 5,000 sq. ft. during construction.	X	X	TMS 402 Table 3.1.3	1705.4
<input type="checkbox"/>	Verification of proportions of materials in premixed or preblended mortar prestressing grout, and grout other than self-consolidating grout, as delivered to the project site.	X	X	TMS 402 Table 3.1.3	
<input type="checkbox"/>	Verification of Slump flow and Visual Stability Index (VSI) as delivered to the project site in accordance with Specification Article 1.5 B.1.b.3 for self-consolidating grout.	X	X	TMS 402 Table 3.1.3	
<input type="checkbox"/>	Verify compliance with the approved submittals.		X	TMS 602 Art 1.5	
<input type="checkbox"/>	Verify that the following are in compliance:				
<input type="checkbox"/>	Proportions of site-mixed mortar, grout and prestressing grout for bonded tendons.		X	TMS 602 Art 2.1, 2.6A, 2.6B, 2.6C, 2.4G.1.b	
<input type="checkbox"/>	Grade, type, and size of reinforcement and anchor bolts, and prestressing tendons and anchorages		X	TMS 402 Sec 6.1, TMS 602 Art 2.4, 3.4	
<input type="checkbox"/>	Placement of masonry units and construction of mortar joints.		X	TMS 602 Art 3.3B	
<input type="checkbox"/>	Placement of reinforcement, connectors and prestressing tendons and anchorages	X		TMS 402 Sec 6.1, 6.2.1, 6.2.6, 6.2.7 TMS 602 Art 3.2E, 3.4, 3.6A	
<input type="checkbox"/>	Grout space prior to grouting	X		TMS 602 Art 3.2D, 3.2F	
<input type="checkbox"/>	Placement of grout and prestressing grout for bonding tendons.	X		TMS 602 Art 3.5, 3.6C	
<input type="checkbox"/>	Size and location of structural elements		X	TMS 602 Art 3.3F	
<input type="checkbox"/>	Type, size and location of anchors including other details of anchorage of masonry to structural members, frames or other construction.	X		TMS 402 Sec 1.2.1(e), 6.1.4.3, 6.2.1	
<input type="checkbox"/>	Welding of reinforcement	X		TMS 402 Sec 8.1.6.7.2, 9.3.3.4(c), 11.3.3.4(b)	
<input type="checkbox"/>	Preparation, construction and protection of masonry during code weather (temperature below 40 degrees F) or hot weather (temperature above 90 degrees F)		X	TMS 602 Art 1.8C, 1.8D	
<input type="checkbox"/>	Application and measurement of prestressing force	X		TMS 602 Art 3.6B	
<input type="checkbox"/>	Placement of AAC masonry units and construction of thin-bed mortar joints	X		TMS 602 Art 3.3B.9, 3.3F.1.b	
<input type="checkbox"/>	Properties of thin-bed mortar for AAC masonry	X		TMS 602 Art 2.1 C.1	
<input type="checkbox"/>	Observe preparation of grout specimens, mortar specimens and / or prisms.	X		TMS 602 Art 1.4B.2.a.3, 1.4B.2.b.3, 1.4B.2.c.3, 1.4B.3, 1.4B.4	

<input type="checkbox"/>	WOOD CONSTRUCTION: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect high-load diaphragms for grade/thickness of sheathing, nominal size of members, fastener size, number and spacing.		X	Contr. docs	1705.5.1, 2306.2
<input type="checkbox"/>	Metal-plate-connected wood trusses spanning 60 feet or greater: temporary installation restraint / bracing and permanent individual truss member restraint / bracing.		X	App. truss submittal package	1705.5.2

<input type="checkbox"/>	SOILS: Special Inspection and Testing are required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	-	X	Geotech Report, Contract Docs	Table 1705.6
<input type="checkbox"/>	Verify excavations are extended to proper depth and have reached proper material.	-	X		
<input type="checkbox"/>	Perform classification and testing of compacted fill materials.				
<input type="checkbox"/>	Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	X	-		
<input type="checkbox"/>	Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.	-	X		
<input type="checkbox"/>	During fill placement inspector shall verify that proper materials and procedures.	X			

<input type="checkbox"/>	DRIVEN DEEP FOUNDATION ELEMENTS: Special Inspection and Testing are required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify element materials, sizes and lengths comply with the requirements.	X	-	Geotech Report, Contract Docs	Table 1705.7
<input type="checkbox"/>	Determine capacities of test elements and conduct additional load tests, as required.	X	-		
<input type="checkbox"/>	Inspect driving operations and maintain complete and accurate records for each element.	X	-		
<input type="checkbox"/>	Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element.	X	-		
<input type="checkbox"/>	For steel elements, perform additional special inspections in accordance with Section 1705.2. (See Special Inspections for Concrete Construction.)	-	-		
<input type="checkbox"/>	For concrete elements and concrete-filled elements, perform tests and additional special inspections in accordance with Section 1705.3. (See Special Inspections for Concrete Construction)	-	-		
<input type="checkbox"/>	If applicable, RDP to identify: specialty elements, additional insp.	-	-		

<input type="checkbox"/>	CAST-IN-PLACE DEEP FOUNDATION ELEMENTS: Special Inspection and Testing is required.				
	Type	Continu- ous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Inspect drilling operations and maintain complete and accurate records for each element.	X	-	Geotech Report, Contract Docs	Table 1705.8
<input type="checkbox"/>	Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end-bearing strata capacity. Record concrete or grout volumes.	X	-		
<input type="checkbox"/>	For concrete elements, perform tests and additional special inspections in accordance with Section 1705.3. (See Special Inspections for Concrete Construction)	-	-		

<input type="checkbox"/>	HELICAL PILE FOUNDATIONS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Installation equipment used, pile dimensions, tip elevations, final depth, final installation torque [and any other information required by the RDP] shall be recorded.	X		Geotech Rept, Contr. Docs	1705.9

<input type="checkbox"/>	SPRAYED FIRE-RESISTANT MATERIALS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify surface preparation in accordance with manufacturer's written instructions				1705.14.2
<input type="checkbox"/>	Verify temperature and area ventilation before and after application in accordance with manufacturer's written instructions.				1705.14.3
<input type="checkbox"/>	Verify thickness of sprayed fire resistant materials. a. Minimum of 4 measurements per 1,000 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E605	1705.14.4
<input type="checkbox"/>	b. Minimum of 25% of structural members at each story.				
<input type="checkbox"/>	Verify density of sprayed fire resistant materials. a. Minimum of one sample per 2,500 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E605	1705.14.5
<input type="checkbox"/>	b. Minimum of one sample from each type of structural framing member per 2,500 SF of floor area or part thereof at each story				
<input type="checkbox"/>	Verify cohesive/adhesive bond strength of sprayed fire resistant materials. a. Minimum of one sample per 2,500 SF of floor, roof, and wall areas, or part thereof at each story.			ASTM E736	1705.14.6
<input type="checkbox"/>	b. Minimum of one sample from each type of structural framing member per 2,500 SF of floor area or part thereof at each story				
<input type="checkbox"/>	c. Bond tests to qualify a primer, paint, or encapsulant when acceptable bond strength performance between these coatings and the fire resistant material has not been determined.				
<input type="checkbox"/>	Condition of finished application.				1705.14.1

<input type="checkbox"/>	MASTIC AND INTUMESCENT FIRE-RESISTANT COATINGS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Verify surface preparation, application, and thickness in accordance with manufacturer's written instructions when applied to structural elements and decks.			AWCI 12-B	1705.15

<input type="checkbox"/>	EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS): Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Water-resistive barrier coatings must be inspected when installed over a sheathing substrate.			ASTM E2570	1705.16.1
<input type="checkbox"/>	EIFS applications not over a water-resistive barrier, masonry, or concrete.				1705.16

<input checked="" type="checkbox"/>	FIRE-RESISTANT PENETRATIONS AND JOINTS: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input checked="" type="checkbox"/>	For high-rise buildings or Risk Category III or IV buildings inspect through-penetrations and membrane penetration firestops.			ASTM E2174, ASTM E814, UL 1479	1705.17, 714.3.1.2 714.4.2
<input checked="" type="checkbox"/>	For high-rise buildings or Risk Category III or IV buildings inspect fire-resistant joint systems and perimeter fire barrier systems.			ASTM: E119, E2393, E1966, E2307, UL 2079	1705.17, 715.3, 715.4

<input type="checkbox"/>	SMOKE CONTROL SYSTEM: Special Inspection and testing is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Smoke control systems are to be tested during erection of ductwork and prior to concealment for leakage testing and recording of device location.		X		1705.18.1
<input type="checkbox"/>	Smoke control systems are to be tested prior to occupancy and after sufficient completion of pressure difference testing, flow measurements and detection and control verification.		X		

<input type="checkbox"/>	FABRICATED ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	The RDP shall identify any structural, load-bearing or lateral load-resisting members or assemblies that are specified to be fabricated off site i.e. in a fabricator's shop. Special inspections shall be required for these items unless: a. The fabricator maintains approved detailed fabrication and quality control procedures that provide conformance to the approved construction documents and IBC 2015. b. The fabricator is registered and approved per 1704.2.5.1. See also the Fabricator Form in this packet for these items.				1704.2.5
<input type="checkbox"/>	If the members or assemblies are to be fabricated on site, refer to their respective categories.				

<input type="checkbox"/>	WIND-FORCE-RESISTANT ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Structural wood	X	X		1705.11.1
<input type="checkbox"/>	Cold-formed steel light-frame construction		X		1705.11.2
<input type="checkbox"/>	Components: Roof covering, roof deck and roof framing connections		X		1705.11.3
<input type="checkbox"/>	Components: Exterior wall covering and wall connections to roof and floor diaphragms and framing.		X		1705.11.3

<input type="checkbox"/>	SEISMIC-FORCE RESISTANT ITEMS: Special Inspection is required.				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Structural steel			AISC 341	1705.12.1.1 1705.13.1.1 1705.13.1.3
<input type="checkbox"/>	Structural steel elements			AISC 341	1705.12.1.2 1905.13.1.2
<input type="checkbox"/>	Structural wood	X	X		1705.12.2
<input type="checkbox"/>	Cold-formed steel light-frame construction				1705.12.3
<input type="checkbox"/>	Designated seismic systems			ASCE 7: 13.2.2	1705.12.4, 1705.13.4
<input type="checkbox"/>	Arch. components: Ext.cladding, interior or exterior nonbearing walls and interior or ext veneer 30 ft or less above grade or walking surface.		X		1705.12.5
<input type="checkbox"/>	Arch. components: Exterior cladding or interior or exterior veneer weighing 5 psf or less.		X		1705.12.5
<input type="checkbox"/>	Arch. components: Interior nonbearing walls weighing 15 psf or less.		X		1705.12.5
<input type="checkbox"/>	Architectural components: Access floors		X		1705.12.5.1
<input type="checkbox"/>	Elect. Equip. anchorage for emergency and standby power systems		X		1705.12.6
<input type="checkbox"/>	Other electrical equipment anchorage		X		1705.12.6
<input type="checkbox"/>	Piping systems / mechanical units designed to carry hazardous materials: installation and anchorage		X		1705.12.6
<input type="checkbox"/>	Ductwork designed to carry hazardous materials: installation and anchorage		X		1705.12.6
<input type="checkbox"/>	Vibration isolation systems: installation and anchorage		X		1705.12.6

<input type="checkbox"/>	SPECIAL CASES: Special Inspection is required. (1705.1.1)				
	Type	Con- tinuous	Periodic	Reference Standard	Code
<input type="checkbox"/>	Construction materials and systems that are alternatives to materials and systems prescribed by code, not addressed in other sections. [Note to RDP: you must identify specifically what is to be inspected.]				1705.1.1
<input type="checkbox"/>	Unusual design applications of materials described in the code. [Note to RDP: you must identify specifically what is to be inspected.]				
<input type="checkbox"/>	Materials and systems required to be installed per additional manufacturer's instructions that prescribe requirements not contained in the code or in referenced standards. [Note to RDP: you must identify specifically]				

Category	Special Inspector Minimum Qualifications
<input type="checkbox"/> Reinforced Concrete	<input type="checkbox"/> Current ICC Reinforced Concrete Special Inspector or ACI Concrete Constr. Inspector <input type="checkbox"/> Concrete field testing by an ACI Concrete Field Testing Technical w/ Grade 1 cert. <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> NYS Registered Design Professional Engineer (RDP) with relevant experience
<input type="checkbox"/> Pre-Stressed Concrete	<u>Pretension Tendons</u> <input type="checkbox"/> Current ICC Reinforced Concrete certification and ACI Concrete Field Testing Technician with Grade 1 certification plus one year relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience <u>Post-tension Tendons</u> <input type="checkbox"/> Current Post-Tensioning Institute (PTI) certification <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Welding	<input type="checkbox"/> Current AWS Certified Welding Inspector <input type="checkbox"/> Current ICC Structural Steel and Welding Certificate plus one year of relevant experience <input type="checkbox"/> Current Level II cert. from American Society for Non-Destructive Testing (NDT) <input type="checkbox"/> Current NDT Level III provided previously certified as NDT Level II
<input type="checkbox"/> High-Strength Bolting & Steel Frame Inspection	<input type="checkbox"/> Current ICC Structural Steel and Welding certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Masonry	<input type="checkbox"/> Current ICC Structural Masonry certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Sprayed Fire-Resistant Materials	<input type="checkbox"/> Current ICC Spray-Applied Fireproofing certification and one year of relevant experience <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Excavation and filling; verification of soils; piling & drilled piers; modular retaining walls	<input type="checkbox"/> Current Level II certification in geotechnical engineering technology/construction from the National Institute for Certification in Engineering Technologies (NICET) <input type="checkbox"/> Intern Engineer with relevant experience <input type="checkbox"/> RDP with relevant experience
<input type="checkbox"/> Inspection of Fabricators	<input type="checkbox"/> Precast: Current ICC Reinforced Concrete certification plus one year relevant exp <input type="checkbox"/> Bar Joist: see welding requirements <input type="checkbox"/> Metal Building: see welding requirements <input type="checkbox"/> Structural Steel: see welding requirements
<input type="checkbox"/> Seismic Items not addressed elsewhere	<input type="checkbox"/> Qualified person with one year of relevant experience <input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience
<input type="checkbox"/> Exterior Insulation and Finish System	<input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience
<input type="checkbox"/> Smoke Control	<input type="checkbox"/> Expertise in fire protection engineering, mechanical engineering and certified as an air balancer <input type="checkbox"/> The RDP responsible for design
<input type="checkbox"/> Fire-Resistant Penetrations & Joints, Special Cases	<input type="checkbox"/> Qualified person with one year of relevant experience <input type="checkbox"/> RDP with relevant experience <input type="checkbox"/> Intern Engineer with relevant experience

Contractor's Statement of Responsibility Form

SUCF Project No: _____

Project Title: _____

Contractor: _____

Contractor's Acknowledgement of Special Requirements

I hereby acknowledge that I have received, read and understand there are special requirements contained in the contract documents. I hereby acknowledge control will be exercised to obtain conformance with the contract documents.

As the Contractor, I will coordinate with the Special Inspector(s) in order to accommodate all inspections and tests as required. I will integrate all inspection activities as provided by the Special Inspector into the Project Schedule.

☐ **I understand if this box is checked, this project includes the construction of a seismic-force-resisting system and / or a wind-force-resisting system as noted on page 2 of the Statement of Special Inspections.**

(Print name / Signature / date)

Fabricator's Certificate of Compliance Form

SUCF Project No: _____

Project Title: _____

Contractor: _____

Fabricator: _____

Fabricated Item: *Structural, load-bearing or lateral load-resisting members of assemblies consisting of materials assembled prior to installation in a building or structure, or subject to operations such as heat treatment, thermal cutting, cold working or reforming after manufacture and prior to installation in a building or structure. Materials produced in accordance with standards referenced by this code, such as rolled structural steel shapes, steel reinforcing bars, masonry units and wood structural panels, or in accordance with a referenced standard that provides requirements for quality control done under the supervision of a third-party quality control agency, are not "fabricated items".*

In lieu of special inspections during fabrication, a fabricator shall provide with the initial shop drawings for consideration:

- The fabricator's written procedural and quality control manuals AND
- Documentation from the most recent audit of fabrication practices.

Date of Last Audit: _____

Company that conducted the Audit:

Contact Person: _____

Name: _____

Address: _____

For ease in evaluation, the Fabricator may attach copies of a Fabricator's Certification or a copy of the latest building code evaluation service report, if applicable.

Date of most recent Approval: _____ **Certification Number:** _____

Certificate issued by: Name: _____ Address: _____

Contact Person: _____

.....
Post Fabrication Certification:

Provide a description of the structural, load bearing or lateral load-resisting assemblies that have been fabricated:

I hereby certify the items described above were fabricated in strict accordance with the approved contract documents.

(Print Name / Signature)

(Print title)

Special Inspector / Approved Agency Final Report

SUCF Project No: _____

Project Title: _____

Contractor: _____

Special Inspector / Approved Agency: _____

We have completed the specified inspections and testing as identified in the Statement of Special Inspections dated _____. To the best of my information, knowledge and belief, the inspections we have completed have been performed and all discovered discrepancies have been reported to the Registered Design Professional in Responsible Charge.

All interim reports submitted prior to this Final Report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,

(Signature / date)

(Seal or Certification)

(Print name)

(Print title)

SECTION 020700
SELECTIVE REMOVALS & DEMOLITION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Extent of Work

Removal and demolition of selected items from selected areas of the building as indicated on the Drawings; items to be removed include, but are not limited to, the following:

1. Existing elevator equipment

B. Recycling and disposal of non-hazardous waste shall be performed in accordance with Section 017419 - Construction Waste Management.

1.03 SUBMITTALS

A. Schedule

Submit a schedule indicating proposed methods and sequence of operations for selective removals and demolition Work, prior to commencement of operations. The sequence of operations shall be planned, in detail, to ensure uninterrupted progress of school sessions.

B. Submit details and procedures for dust and noise control.

C. Quality Control Submittals

1. Contractor Qualifications

a. Provide proof of Contractor and Professional Engineer qualifications specified under "Quality Assurance".

b. Provide proof of Refrigerant Recovery Technician qualifications

D. Sustainability Submittals

1. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA

regulations. Include name and address of technician and date refrigerant was recovered.

2. Refer to Section 017419 Construction Waste Management for list of managed materials and submittal requirements.
3. Statement of the measures taken to reduce air with dust and particulate matter.

1.04 RESPONSIBILITY, PROTECTION, DAMAGES, RESTRICTIONS

A. Condition of Space

The Fund assumes no responsibility for actual condition of the space in which removals and demolition Work is performed.

B. Protections

Provide temporary barricades and other forms of protection required to protect the Fund and Campus property, personnel, students and general public from injury due to selective removals and demolition work.

1. Provide protective measures as required to provide free and safe passage of students, Campus personnel, Fund personnel, and the general public.
2. Protect from damage existing finish work that is to remain in place and which becomes exposed during operations.
3. Protect floors with building paper or other suitable covering.

C. Damages

Promptly repair any and all damages to all property and finishes caused by the removals and demolition work; to the Consultant's satisfaction and at no extra cost to the Fund.

D. Explosives

The use of explosives is prohibited.

E. Power-driven Tools (for interior removals and demolition).

Only hand-held electric power-driven tools conforming to the following criteria shall be used to cut or drill concrete and masonry:

1. Electric Chiselling Hammer
 - a. Power Data 115 Volts AC
7-8 Amps
Three-wire grounded connection
 - b. Percussion 2400-2600 Impacts/Minute
 - c. Type/Size Hand-held (+ 18-inch length)
 - d. Unit Weight 12-15 pounds (minus chisel bit)
2. Electric Hammer Drill
 - a. Power Data 115 Volts AC
5-8 Amps
Three-wire grounded connection
 - b. Percussion 2400-3200 Impacts/Minute
 - c. Type/Size Hand-held (+ 18-inch length)
 - d. Unit Weight 12-15 pounds (minus chisel bit)
 - e. Speed Data 0-0500 RPM (Under load)

1.05 QUALITY ASSURANCE

A. Qualifications

1. Company specializing in performing the Work of this Section shall have a minimum of 3 years experience and shall have worked on 3 projects of similar size.
2. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

B. Regulatory Requirements

1. Work of this Section shall conform to all requirements of the NYS Building Code and all applicable regulations and guidelines of all governmental authorities having jurisdiction, including, but not limited to, safety, health, and anti-pollution regulations. Where more stringent requirements than those contained in the Building Code or other applicable regulations are given in this Section, the requirements of this Section shall govern.
2. Conform to the requirements of "Safety and Health Standards, Subpart P - Excavations, Trenching and Shoring" - OSHA.

PART 2 - PRODUCTS - NOT APPLICABLE**PART 3 - EXECUTION****3.01 INSPECTION**

- A. Prior to commencement of the selective removals and demolition Work, inspect the areas in which the Work will be performed. Determine and list the existing conditions of rooms or area surfaces and equipment. After the Work in each respective area is completed, determine if adjacent surfaces or equipment have been damaged as a result of the Work; if so, the damage shall be corrected at the Contractor's expense.
- B. Create a safety zone around the demolition area as per Section BS 3306 of the 2020 NYS Building Code. Fences/barriers shall be erected to prevent persons other than workers from entering.

3.02 REMOVALS AND DEMOLITION WORK

- A. Perform selective demolition Work in a systematic manner and use such methods as are required to complete the Work indicated, and in accordance with the Specifications and governing State and Federal regulations.
- B. When walls, partitions, floors, and ceilings (or portions thereof) are indicated to be removed; unless indicated otherwise:
 - 1. Remove all items attached to the surfaces of the construction to be removed.
 - 2. Remove all plumbing piping, fixtures, accessories and rough-in occurring on or in the construction to be removed; cap piping and/or re-route lines as indicated or required.
 - 3. Remove all connectors, piping, ductwork and other HVAC items and accessories occurring on or in the construction to be removed; cap and/or re-route piping and ductwork as indicated or required.
 - 4. Remove all electrical wiring, to include, but not limited to, lighting, communications, alarms and all related appurtenances, conduits, devices, fixtures, and other electrical items and accessories occurring on or in the construction to be removed; disconnect power and remove wiring and conduit back to source.

3.03 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove debris, rubbish and other materials resulting from the removals and demolitions from the building immediately; transport and legally dispose of materials off-site. Disposal method shall be in accordance with State and Federal regulations. Items to be retained by the Campus shall be delivered to locations indicated in the Article titled "Ownership of Materials".
- B. Burning of removed materials is not permitted on the job site.

3.04 CLEAN-UP AND REPAIR

- A. Upon completion of removals and demolition Work, remove tools, equipment and all remaining demolished materials from the site.
- B. Repair all damaged areas caused by the removals and demolition Work. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.
- C. All areas in which Work was performed under this Section shall be left "broom-clean."

3.05 OWNERSHIP OF MATERIALS

- A. All equipment, materials, and items removed shall remain the property of the Campus if desired; equipment, material and items not desired to be re-used or retained by the Authority and the Campus shall be removed from the site by the Contractor. The Authority's Representative will designate which equipment, materials and items will be retained.

END OF SECTION

* * *

FLIST OF SUBMITTALS

<u>SUBMITTAL</u>	<u>DATE SUBMITTED</u>	<u>DATE APPROVED</u>
Schedule:		
1. Schedule of proposed Methods		
2. Sequence of operations:	_____	_____
Details & procedures for dust & noise control:	_____	_____
Receipt for salvaged items:	_____	_____
Qualifications:	_____	_____
1. Contractor		
2. Professional Engineer		
3. Refrigerant Recovery Technician.		
Sustainability:	_____	_____
1. Refrigerant Recovery Statement		
2. Demolition waste calculations.		
3. Air with dust and particulate matter reduction statement.		

* * *

SECTION 02 82 13
ASBESTOS ABATEMENT

PART 1 - GENERAL

The following shall apply to the abatement of asbestos being done under this contract:

- a. Applicable Regulations: All work to be done under this Contract shall be in compliance with Part 56 of Title 12 of the Official Compilation of Codes, Rules and Regulations of the State of New York (cited as 12 NYCRR Part 56), as currently amended, and applicable federal and state regulations.
- b. Presumed Asbestos-Containing Material: During any work of this contract that disturbs existing material, all material that can be defined as “presumed asbestos-containing material” according to 29 CFR Part 1926 and guidance documents published by New York State Department of Health’s (NYSDOH) Environmental Laboratory Approval Program (ELAP) and Bureau of Occupational Health (BOH), and the NYS Department of Labor (DOL) shall be considered asbestos-containing materials unless asbestos test results bound at the end of this section indicated otherwise; or if the Contractor, at its own expense, tests the presumed asbestos-containing material and rebuts the presumption, as permitted by 29 CFR Part 1926.
- c. Applicable Variance: During the performance of the work, comply with the requirements of variance(s), if any, obtained by the Owner and/or consultant, which are bound after this section. The Contractor is responsible for the cost and the time required to obtain any additional variance(s) that they deem desirable in the performance of the work and feel may be consistent with the policies/ procedures as set forth in 12 NYCRR Part 56. Prior to requesting any additional variance(s), submit a draft(s) of the request to the Consultant and the Fund for review and approval. Copies of all additional variance(s) obtained by the Contractor shall be provided to the Consultant, Fund and the Campus prior to performing any work affected by the additional variance(s).
- d. Owner Project Fact Sheet: The Contractor shall complete and submit three copies of the Asbestos Material Fact Sheet (appended to this Section) to the Fund prior to the project startup. If the initial submission is not complete for a reason approved by the Fund, the complete Asbestos Material Fact Sheet shall be submitted prior to acceptance of the applicable work.
- e. Air Monitoring: The Owner shall be responsible for hiring and paying an independent third party firm to perform the requirements of air monitoring as called for in 12 NYCRR Part 56 and as permitted in Section 2.17 of the Agreement. The Owner’s air monitoring firm shall provide 24 hour turn around on tests, will work during the hours between 7 AM and 4 PM on Monday through Friday unless otherwise agreed to by the Owner, and may inspect the work for cleanliness prior to performing sampling. Cooperate with the Owner’s air monitoring firm in sequencing and scheduling the work in concert with the air monitor’s availability. Provide access, electrical power and lighting, cleaning, and other work required to facilitate successful air monitoring activities. Provide additional air monitoring, at no expense to the Owner, as required to protect and monitor on site workers if required by applicable safety regulation or the contractor’s safety plan.

- f. Disposal Procedures: It is the responsibility of the Contractor to determine and comply with the waste handling, transportation and disposal regulations in effect at the time the work is performed, as applicable to the work site(s) and proposed waste disposal facility/landfill(s). The asbestos contractor must comply fully with the latter regulations and all other applicable U.S. Department of Transportation, Environmental Protection Agency (EPA), and other Federal, State and local rules and regulations in effect at the time the work is performed. Submit three copies of all pertinent manifests to the Owner. Use a single source facility for disposal of all waste of similar type and category.
- g. Submittals: Prior to commencement of the work on this project, the Contractor must submit the following to the Owner:
- 1) Copy of original insurance policy.
 - 2) Copy of Department of Labor notification.
 - 3) Copy of EPA notification.
 - 4) Abatement Plan Layout - Decon, Negative Air Lines, Variances.
 - 5) SUCF Asbestos Removal Fact Sheet.
 - 6) Product Information - Encapsulant, Mask, etc.
 - 7) Material Safety Data Sheets.
 - 8) Asbestos Handling License.
 - 9) Waste Transporter Permits.
 - 10) Dumping Receipt - Waste Manifest.
 - 11) Testing Lab - License, Certification.
 - 12) Employees - Workers Acknowledgement, Certification.
 - 13) Supervisor's Certification
- h. Special Requirements
- 1) The drawings, schedules and specifications indicate the applicable scope of abatement work.
 - 2) The Contractor shall have at least one English-speaking supervisor on the job site at all times while the project is in progress.
 - 3) Prior to the commencement of work involving asbestos demolition, removal, and/or renovation, the Contractor must submit to the Owner the name of its on-site asbestos supervisor responsible for such work and the named supervisor's NYS certification documentation showing completion of an EPA approved training course for asbestos supervisors. The approved supervisor shall maintain such certification during the work and be on site at all times when abatement work is being performed.
 - 4) If a waste shipment record has not been returned to the Owner within 45 days, a report must be filed by the Owner with the EPA describing the steps the Owner has taken to determine the status of the shipment. During the Owner's preparation of the latter report, the Contractor shall give its constant personal attention and assistance in determining the status and disposition of the shipment.

STATE UNIVERSITY CONSTRUCTION FUND ASBESTOS MATERIAL REMOVAL FACT SHEET

SUCF PROJ NO. _____ PROJECT TITLE _____ DATE _____

SCOPE OF WORK _____

ASBESTOS CONTRACTOR:

Name/Address _____

PRIME CONTRACTOR:

(If applicable) _____

Phone No.: _____

Phone No. _____

Contract Award Amount: _____ Asbestos Lic No. _____

Contract Completion Date: _____ Expiration Date: _____

ASBESTOS ABATEMENT PERSONNEL: *(Attach Additional Sheets as Required)*

	Name	Title/Function	Security No.	Social No.	Certificate Date	Expir.
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____

ASBESTOS ABATEMENT WORK: *(Attach Additional Sheets as Required)*

	Bldg (1) Usage	Removal Location (Bldg/Room)	Mat'l (2) Removed.	Methods Quantity(3)	of Removal
1.	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____

Date Removal Begins: _____ Date Removal Ends _____

Asbestos Carrier _____ Disposal Site _____

Phone No. _____ Phone No. _____

Hauler Permit No.(s) _____

NOTE: In addition to the above information, the contractor shall submit all required documentation as stipulated by the New York State Labor Law Article 30; Part 56, 12NYCRR, which includes a copy of the asbestos contractor license and all asbestos handling certificates, waste transporters permits, disposal receipt acknowledgement, and air test reports (prior, during, and after abatement)

STATE UNIVERSITY CONSTRUCTION FUND
ASBESTOS MATERIAL REMOVAL FACT SHEET

KEY

BUILDING USAGE

A	Administration	F	Dormitory
B	Academic	G	Mechanical Room
C	Library	H	Steam Tunnel
D	Health/Physical Education	I	Other
E	Dining Halls		

MATERIAL REMOVED

Acoustical/Decorative Plasters =	ADP
Fireproofing Materials =	FM
Troweled Wall/Ceiling Plasters =	TCP
Mud Joints/Tees =	MJT
Pipe Covering =	PC (List Pipe Size)
Boiler/Hot Water Tank Insulations =	BHTI
Panels/Ceiling Tiles =	PCT
Transite Panels =	TP
Vent/Drain Pipes =	VDP (List Size)
In-Place Gaskets =	IPG
Vinyl Asbestos Siding =	VAS
Vinyl Asbestos Tile =	VAT
Vinyl Asbestos Roofing =	VAR
Other (Describe) =	0: _____

QUANTITY OF MATERIAL

S.F. = Square Feet i.e. Walls, Ceiling, etc.
L.F. = Linear Feet i.e. Pipe, etc.

WET

DRY

GLOVEBAG

TENT

OTHER _____

SECTION 07147
CRYSTALLINE WATERPROOFING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide labor, materials, equipment, services to install crystalline waterproofing on walls and slabs of sump pits and tanks as indicated.

1.02 REFERENCES

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

- A. International Concrete Repair Institute (ICRI)

- B. **ASTM International** (ASTM)

ASTM C109 Standard Test Methods for comprtessive
Strength of Hydraulic Cements

- C. US Army Corp of Engineers

CRD-C 48-92 Method of Test for Water Permeability

1.03 SUBMITTALS

- A. Product Data

Provide manufacturer's information on the waterproofing material, including application instructions.

- B. Quality Control Submittals

1. Certificates: Furnish manufacturer's certification that materials meet or exceed specification requirements.

2. Procedure: Submit written description of water-proofing procedures and operations sequencing based

on manufacturer's requirements prior to commencing the Work.

3. Submit intent to warranty document from manufacturer of waterproofing with a performance guarantee against water penetration through waterproofing system for 5 years with any necessary replacement material and labor supplied at no cost to Fund.
4. Contractor Qualifications: Provide proof of installer qualifications specified under "Quality Assurance".

C. Warranty

Submit manufacturer's warranty and installer's guarantee.

D. Mock-up

Provide mock-up as indicated under Quality Assurance.

1.04 QUALITY ASSURANCE

A. Qualifications

Waterproofing Installer: Company specializing in the installation of crystalline waterproofing shall have a minimum of five years successful experience and at least three similar installations of equal magnitude that have proven successful in all respects for a period of at least three years. Contractor shall be trained by the waterproofing manufacturer and shall have a certificate of training on file from the manufacturer.

B. Manufacturer's Representative

All work of this Section shall be performed under the supervision of the waterproofing material manufacturer's representative.

C. Job Mockups

Prior to performing the work of this Section, prepare a sample panel of not less than 25 sq. ft. of waterproofing work, 50% shall show surface preparation. Demonstrate all application techniques in part 3 in the presence of the consultant representative. Do not proceed further

with the work until the sample panel has been approved by the Fund's representative. Sample shall be a portion of the area to be restored and may be kept if approved.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver the specified product in original, unopened containers with the manufacturer's name, labels, product identification and batch numbers.
- B. Store and condition the specified product as recommended by the manufacturer.
- C. Do not store liquid material in hot sun. Keep material from freezing.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply if the temperature unless surface temperature and ambient temperatures are 45-50°F and rising and below 85°F unless the material manufacturer is consulted for recommendations.
- B. Do not use frozen materials or materials coated with ice or frost.
- C. Protect from rain until material is completely dry.

1.07 WARRANTY

- A. Furnish both manufacturer's and installer's warranty/guarantee in a form satisfactory to the Fund that guarantees all Work for a period of five (5) years from the date of the acceptance of the building by the Fund against any defects in workmanship or material and that this work will remain absolutely watertight for the entire period of the guarantee.
- B. Should any defects develop or any leaks occur in the Work within the guarantee period, such defects or leaks shall at once be remedied and made good without cost or expense to the Campus or the Fund.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Xypex Chemical Corporation, Richmond, BC, Canada

- B. Aquafin, Inc, Elkton, MD
- C. Kryton International, Inc, Vancouver, BC, Canada
- D. **Euclid Chemicals**

2.02 MATERIAL

- A. Crystalline Waterproofing
 - 1. Chemically reactive material that when placed on concrete creates a crystalline structure preventing the passage of water.
 - a. Compressive strength 3000 psi @ 28 days
ASTM C109
 - b. Permeability No measurable leakage
CRD-C48 or acceptable when tested at 65 psi
test by other agency Positive or negative
 - 2. Product
 - a. Xypex Concentrate by Xypex
 - b. Vandex **AM-10 by Euclid Chemicals**
 - c. Aquafin IC by Aquafin
 - d. Krystol T1 and T2 by Kryton International

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Do not begin surface preparation and application of waterproofing compound until all cracks, joints, and surface defects are repaired. Verify that all reglets have been formed at joints to receive the material.

3.02 SURFACE PREPARATION

- A. All substrates shall be clean and sound, free of frost, dust, laitance, grease, curing compounds, waxes, impregnations, foreign particles, other coatings, and disintegrated materials. All projections, rough spots, etc., shall be dressed off.

- B. Rout out faulty joints or cracks exceeding .02" to 3/4" wide by 1" deep minimum, as well as honey combs. Repair defects according to manufacturer's instructions with manufacturer's repair product, which shall be included in the written procedure.
- C. Roughen form tie holes.
- D. Mechanically prepare surface by high-pressure waterblasting, shot blasting, or mechanical means to clean surface and provide the required surface profile. Provide an ICRI CSP 3 surface preparation (light shot blasting).
- E. Do not damage previously repaired surfaces and cracks.
- F. Rinse surfaces to be waterproofed several times so that concrete is thoroughly saturated. Remove any standing water, as surface is to be surface-saturated dry.

3.03 APPLICATION

- A. At all reglets, tie holes, and prepared cracks, mix material to consistency required by manufacturer and fill out with manufacturer's waterproofing patch product flush with adjacent surface, leaving a brush finish. Apply a slurry coat of material around the joint if required. Entire procedure is to be included in the Contractor's submittals. Follow manufacturer's instructions.
- B. Mix components in accordance with manufacturer's instructions and in correct proportions to a slurry consistency. Mixing of the components shall be done mechanically, using a low-speed (400-600 rpm) drill and jiffy paddle. Mix components in a clean, dry mixing container. Do not add water to mixture.
- C. Coating shall be applied only to approved prepared surfaces with trowels, high-quality brushes, rollers, or "hopper type" spray equipment. Immediately trowel the product level. Surface shall be saturated surface dry prior to application. For hot surfaces in direct sunlight, wet down surface with clean water then allow to surface dry prior to coating. Coating shall be applied at ambient and substrate temperatures between 45°F and 85°F.

- D. Apply material for slabs at a rate of 2 lb/sq.yd. (or as required by specific manufacturer) in one or two coats as recommended by manufacturer. For walls, apply in two coats. Base coat shall be applied at a rate of 1.25-1.4 lb/sq.yd (or as required by specific manufacturer). After initial set but while still "green", apply finish coat at a rate of 1.25-1.4 lb/sq.yd. Leave stokes in a parallel, uniform direction. Use light pre-watering between coats when rapid drying conditions occur.

3.04 TESTING

- A. After manufacturer's recommended curing period, fill tanks and pits with water and let stand for a week. Do not fill at a rate of greater than 6.5' in 24 hours. Should leakage occur, drain tanks and to perform repairs.
- B. Repair leaks by routing out large joints and cracks and installing manufacturer's water plug material. Apply additional applications of slurry at areas of fine cracks or seepage.

3.05 PROTECTION AND CLEANING

- A. Protect material from extreme heat and cold during the curing process using tarps or other means as recommended by the materials manufacturer.
- B. Clean material from adjacent surfaces not to be protected as well as residue from the protective measures (i.e. tape residue)
- C. Clean surface with 100 ppm chlorine water solution.

3.06 FIELD QUALITY CONTROL

- A. The Consultant will inspect surfaces and reject any that contain cracks or other defects. These areas shall be fixed at Contractor's expense.
- B. Engage the services of the material manufacturer's representative to instruct in the proper usage of the material and to inspect the work throughout the project.

END OF SECTION

* * *

SECTION 07270
FIRESTOPPING/SMOKE SEALS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide firestopping at all penetrations and juncture joints of fire-rated walls, floors and ceilings in accordance with the requirements of the 2020 NYS Building Code.
- B. Firestopping and Smoke Seals shall be provided, but not limited to the following specific locations:
 - 1. Penetrations for the passage of duct, cable, cable tray, conduit, piping and electrical busways and raceways through fire-rated vertical barriers (walls and partitions), horizontal barriers (floor slabs and floor/ceiling assemblies), and vertical service shafts.
 - 2. Openings between floor slabs and curtain walls and fire rated walls and curtain walls.
 - 3. Openings between structurally separate sections of walls or floors.
 - 4. Construction Joints between the top of walls and floor or roof slab and steel deck assemblies, or, concrete floor or roof slab.
 - 5. Vertical service shafts at each floor level.
 - 6. Expansion joints in walls and floors.
 - 7. Openings and penetrations in fire-rated partitions or walls containing fire doors.
 - 8. Locations shown specifically on the Drawings.
- C. Where firestopping will be exposed to public view, select firestopping material/assembly that can be painted as permitted by the assembly. Paint shall be as approved by the manufacturer and color shall match adjoining painted areas.

1.02 REFERENCES

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated

by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. American Society for Testing and Materials (ASTM)
2. Underwriters Laboratories, Inc. (UL)
3. National Fire Protection Association (NFPA)
4. Warnock Hersey

1.03 DEFINITIONS

- A. Penetration: Any opening or foreign material passing through or into a fire-rated barrier.
- B. Fire-Rated: Have the ability to withstand the effects of a standard fire exposure for a specified time period, as determined by qualified testing.
- C. Fire-Rated Barrier: A floor, wall, partition or floor-ceiling assembly able to withstand a standard fire and hose stream test without failure.
- D. Fire resistance rating: The ability of a structure to act as a barrier to the spread of fire and to confine it to the area of origin. Ratings are expressed in hours and apply to beams, columns, floors, ceilings, roofs, walls and partitions.
- E. Firestopping: A means of sealing openings in fire-rated barriers to preserve or restore the fire resistance rating.
- F. Firestop System: A material, or combination of materials, installed to retain the integrity of fire-rated construction by maintaining an effective barrier against the spread of flame, smoke or gases through penetrations in fire-rated barriers.
- G. F Rating: The time period that the through-penetration firestop system limits the spread of fire through the penetration when tested in accordance with ASTM E814.
- H. T Rating: The time period that the penetration firestop system, including the penetrating item, limits the maximum temperature rise to 325°F (163°C) above its initial temperature through the penetration on the non-fire side when tested in accordance with ASTM E814.

1.04 DESIGN REQUIREMENTS**A. Technical Requirements**

1. Firestopping materials shall be UL Classified as "Fill, Void or Cavity Material" for use in Through-Penetration Firestop Systems.
2. Firestop Systems shall provide a fire resistance rating at least equal to the hourly resistance rating of the fire-rated barrier and resist passage of smoke and other gases.

B. General Considerations

1. Firestop Systems do not re-establish the structural integrity of load bearing partitions. The Contractor shall consult the Fund's Representative prior to penetrating any load bearing assembly.
2. Firestop systems are not intended to support live loads or traffic. Contractor shall consult the Fund's Representative if there is reason to believe these limitations may be violated.

1.05 SUBMITTALS**A. Product Data**

1. Submit manufacturer's product information for each type of firestopping/smoke seal and assembly installed, including application instructions and specifications.
2. Product data for paint to be used indicating compliance with the related firestopping/smoke seal assembly used.

B. Shop Drawing

Submit shop drawings of each firestopping or smoke seal system/assembly to be installed in the project, showing all parts of the system, required clearances.

C. Quality Control Submittals**1. Certificates**

- a. Furnish manufacturer's certification that materials meet or exceed specification requirements for each of the performance tests specified in Part 2. Provide testing certification.

- b. Furnish applicator's certification that material has been completed as specified to meet fire resistance ratings, thickness requirements, and application requirements of the applicable assembly.
- c. Furnish UL, BSA, MEA, or OTCR approval of material.
- d. Furnish certificate stating each material is 100% asbestos free.

2. Contractor Qualifications

Provide proof of Manufacturer and Applicator qualifications specified under "Quality Assurance".

D. Mock-up

Provide mock-up as indicated under Quality Assurance.

E. Guarantee

- 1. Contractor and installer's installation guarantee.

F. Low Emitting Materials Compliance Submittals.

- 1. Provide documentation for each sealer to be used on site, indicating that the sealers comply with low V.O.C. requirements as stated in Specification Section G01600.

1.06 QUALITY ASSURANCE

A. Qualifications

- 1. Manufacturer: Company specializing in the manufacture of firestopping/smoke seal materials to be used in this Contract shall have a minimum of five years experience.
- 2. Installer: All firestopping Work shall be performed by a Subcontractor who will be acceptable to the firestopping manufacturer in the application of its products and systems and have a minimum of three years experience and shall have worked on at least two projects with similar quantities of materials used.

B. Regulatory Requirements

1. Building Code: Material and application shall meet the requirements for firestopping materials in accordance with the 2020 NYS Building Code.
2. Material must have UL approval for each assembly utilized. Comply with the following for firestopping that is required to be in compliance with BC 714 of the 2020 NYS Building Code:
 - a. ASTM E84 - Surface Burning Characteristics of Building Materials.
 - b. ASTM E814 - Fire Tests of Through Penetration Firestops.
 - c. UL 1479 - Fire Tests of Through-penetration Firestops.
 - d. UL - Fire Resistance Directory; Through-Penetration Firestop Systems (XHEZ), and Fill, Void or Cavity Materials (XHHW).
 - e. UL 723 - Standard Test Method for Surface Burning Characteristics of Building Materials.

C. Manufacturer's Certification

1. Manufacturer shall provide written certification stipulating that its products and systems used in this Project, if installed in accordance with the manufacturer's recommendations, shall provide the firestopping specified in this Section, as indicated by its UL rating for that specific installation.
2. The certification shall not include either or both of the following statements, or variations thereof:

"Owner or User shall determine suitability of the product or system for its intended use and assume all risks and liabilities connected therewith".

and,

"Owner or User shall test application of product or system for its specific use".

D. Mock-up

1. Install, on representative substrates (on site), one mock-up of each type of firestopping system to be used on Project, for each fire rating required and for each type of wall, floor, and ceiling. Acceptable mock-up installations may remain as part of the completed work.
2. **Where firestopping system is intended to be painted, separate mock-up(s) including painting shall also be provided. Such mock-up may not be part of the completed work.**

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original, unopened packages bearing name of manufacturer, product identification, and the proper UL labels for fire hazard and fire-resistance classification.
- B. Reject damaged packages found unsuitable for use and remove from job site.
- C. Store materials off ground, under cover, and away from damp surfaces.
- D. Keep materials dry at all times. Wet material shall be discarded.
- E. Rotate stock material and use prior to expiration date.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Maintain air and substrate temperature at a minimum temperature of 50°F for 24 hours before, during, and for 24 hours after application of the material or as required by the product literature, which ever is more stringent. Contractor shall provide enclosures with heat to maintain temperatures.

1.09 GUARANTEE

- A. Submit a guarantee, executed by the Contractor and co-signed by the installer, agreeing to repair/replace firestopping work performed under this Contract which has cracked, flaked, dusted excessively, peeled, or has separated or fallen from the substrate due to defective workmanship for a period of two (2) years from the date of substantial completion.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Hilti Construction Chemicals, Inc., Tulsa, OK.
- B. The Carborundum Company, Niagara Falls, NY.
- C. 3M Fire Protection Products, St. Paul, MN.
- D. Tremco Commercial Sealants & Waterproofing, Beachwood, Ohio
- E. Specified Technologies, Inc., Somerville, NJ
- F. W. R. Grace & Co., Macungie, PA
- G. RectorSeal Corp., Houston, TX

2.02 MATERIALS

- A. Grout and sealant systems, as well as integral firestopping sleeves and membranes, shall meet or exceed requirements as specified in Part 1 of this Section and shall be acceptable to the Consultant.
- B. Listing of manufacturer does not mean that manufacturer has firestopping assemblies for all conditions to be encountered in the Work. Contractor is responsible for selection of material and system appropriate to the condition.
- C. Through-penetration firestop systems shall meet the requirements of ASTM E814 or UL 1479, which include, but are not limited to, the following:
 - 1. Prevent flame pass-through.
 - 2. Restrict temperature to not exceed 325°F over ambient on side of assembly opposite flames.
 - 3. Provide a positive smoke seal.
 - 4. Withstand hose stream test with a minimum positive pressure differential of 0.01 inch (2.49 pa.)
 - 5. Provide an F rating of not less than the required fire rating of the wall penetrated.
 - 6. Provide an F rating and a T rating for floor penetrations of not less than 1 hour but not less than the required fire rating of the floor penetrated, except as follows:

- a. Floor penetrations contained and located within the cavity of a wall do not require a T-rating.
 - b. Metallic piping or tubing penetrating a single fire rated floor, having a maximum 6" diameter can be firestopped with concrete, grout or mortar of thickness to maintain the fire rating of the floor penetrated. No limit to the number of floors penetrated if the area of the aggregate area of penetration does not exceed 144 square inches in any 100 square feet of floor area.
- D. Firestopping materials shall be asbestos-free, emit no toxic or combustible fumes and be capable of maintaining an effective barrier against flame, smoke, gas, and water in compliance with requirements of this Section.
 - E. Firestopping materials/systems shall be flexible to allow for normal movement of building structure and penetrating items(s) without affecting the adhesion or integrity of the system.
 - F. Firestopping materials shall not require hazardous waste disposal of used containers/packages.
 - G. On insulated pipe, the fire-rating classification must not require the removal of the insulation.
 - H. Firestopping materials shall be free of solvents. Shrinkage while curing shall not exceed shrinkage experienced during specified testing. Firestopping shall remain in complete contact with adjacent construction when fully cured.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine and confirm the compatibility of surfaces to receive firestopping materials. Verify that surfaces are sound, clean and dry and are ready to receive the firestopping.
- B. Verify that penetration elements are properly located and securely fixed, with the proper space between the penetration element and surfaces of the opening.

3.02 PREPARATION

- A. Protect adjacent surfaces and equipment from damage.

B. Clean surfaces of opening.

3.03 INSTALLATION

- A. Install firestopping system in strict accordance with the manufacturer's instructions to obtain/maintain the fire-rating required at the specific location. The Contractor and the Consultant shall be immediately notified of conditions that will not allow the proper installation of the material to achieve the required rating, such as the annular space between the penetration and sleeve not being wide enough to meet the requirements of the assembly.
- B. Provide escutcheons for piping at each side of penetration when subject to view and/or if required by the UL assembly.
- C. **For firestopping to be painted, do not paint until special and/or progress inspections have been completed and are acceptable to the Special Inspector.**

3.04 FIELD QUALITY CONTROL

A. Special Inspection

- 1. The SUCF will assign under the requirements of Section BC 1705.17 a Special Inspector who will inspect the firestopping/smoke seal installation to meet both the Special and Progress Inspection requirements of the 2020 NYS Building Code.
- 2. The Special Inspector will make inspections and any testing deemed necessary.
- 3. Special/Progress inspections will be performed in accordance with both paragraphs 10.9.1 (witnessing) and 10.9.2 (destructive verification) of ASTM E2174. The inspector will witness and verify firestopping and smoke sealing installations. The installation process of a minimum of 10% of all firestopping/smoke seals shall be witnessed and 2% of all firestop/smoke seal installations will be verified utilizing destructive means.

B. Nonconforming Firestopping/Smoke Seal Installation

- 1. When inspection indicates firestopping does not comply with the required assembly, remove and replace firestopping. Failures will result in additional areas of destructive testing.

2. Areas of repair or replacement will be reinspected for compliance to the approved assembly. The costs for additional inspections and testing as required by the inspector shall be borne by the Contractor.

C. Contractors Responsibility for Quality Control

1. Inspect all installations to ensure that all work meets the requirements specified as the Work progresses.
2. Cooperate with the Special Inspector performing Special and Progress Inspections. Provide all access, including scaffolding and ladders. Provide a minimum of 72 hours notice prior to each day of firestopping installation to ensure Inspector is available to witness or verify the requisite number of installations.
3. The Contractor shall include all cost of complying with inspections performed in accordance with ASTM E2174.
4. Do not cover firestopping work until it is accepted and approved by the Special Inspector.
5. The Contractor shall include repair of all firestopping and smoke sealing damaged as a result of the ASTM E2174 destructive verification requirements.
6. The Contractor shall replace all firestopping/smoke sealing of a certain type if 10% of the witnessed or verified types are determined to be non-compliant. This replacement shall be at no cost to the owner.

3.05 CLEANING

- A. Remove excess materials, droppings, and debris; remove excess materials from adjacent surfaces.

3.06 PROTECTION

- A. Protect firestopping installations from damage until completion of all Project Work.

END OF SECTION

LIST OF SUBMITTALS

<u>SUBMITTAL</u>	<u>DATE SUBMITTED</u>	<u>DATE APPROVED</u>
Product Data:	_____	_____
1. Manufacturer's product and installation instructions		
2. Paint data		
Shop Drawings	_____	_____
1. Each firestopping or smoke seal system		
Certifications:	_____	_____
1. Mfr's. certification that materials and systems meet specified requirements test reports		
2. Completion of firestopping in accordance with Building Code and the Specifications		
3. UL or MEA, BSA, OTCR approval of systems and materials		
4. Asbestos-free certification		
Qualifications	_____	_____
1. Manufacturer		
2. Applicator		
Mock-up Samples:	_____	_____
1. Each type of substrate, each Fire-rating		
2. Mock-up with finish paint		
Guarantee:	_____	_____
1. Firestopping/smoke seals		
Low Emitting Materials:	_____	_____
1. Documentation of VOC content for each sealer used inside the building.		

* * *

SECTION 07520
ROOF FLASHING AND RELATED ROOF REPAIR WORK

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

A. The Work of this Section consists of the following:

1. Minor modifications and repairs to an existing warranted or unwarranted roof system including but not limited to pipe and duct penetrations, minor roof membrane repairs and installation of equipment curbs and rails.
2. The furnishing and installation of the following items:
 - a. Premanufactured Metal Curbs
 - b. Warrantable Pitch Pockets
 - c. Lead Flashing (Drains)
 - d. Cants
 - e. Roof membranes and flashings
 - f. Protection Pads
 - g. Premanufactured equipment rails
 - h. Premanufactured pipe portals

B. The Contractor has the option of providing a hot-applied system or a cold-applied system. However, for warranted roofs approval is dependant on the manufacturer of the roof.

C. Modified cap sheet or coated material to be used at all repairs in lieu of gravel. For protected membrane roofing, pavers cut to fit shall be used.

1.02 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

B. ASTM International (ASTM).

- C. Underwriters Laboratories, Inc. (UL).
- D. National Roofing Contractors Association (NRCA).
- E. Thermal Insulation Manufacturers Association (TIMA).
- F. Factory Mutual System (FMS)**
- G. United States Environmental Protection Agency (EPA)

1.03 **SUBMITTALS**

- A. Product Data: Catalog sheets, specifications, and installation instructions, for each material specified or shown on drawing, except for the following:
 - 1. Cants.
 - 2. Wood nailers.
- B. Membrane Manufacturer's Letter of Intent to maintain Warranty

Prior to the Pre-Installation Conference, the Contractor shall register the project with the membrane manufacturer and shall submit the membrane manufacturer's letter of intent to maintain the existing warranty the roof as specified herein.

- C. Shop Drawings

Shop drawing showing the intended repair detail assembly including curb supports, penetration details, if any.

- D. Quality Control Submittals

- 1. Test Reports
 - a. Roof drain and leader test, if affected by work.
 - b. Roof deck fastener pullout test, if applicable
 - c. Daily bitumen temperature charts

- d. Roof flood test at each repair/modification area

2. Applicators Certification

- a. For Unwarranted Roof Systems; submit a letter certifying that the job foreman or crew chief and at least one other member of the roofing crew have installed at least 3 built-up roof systems.

- b. For Warranted Roof Systems; Submit a letter certifying that the job foreman or crew chief are licensed by the manufacturer of the existing roof to perform installations and modifications to the roofing system without voiding the manufacturer's warranty.

3. Material Certification: Letter from the existing roof system manufacturer certifying that the materials used for the Work of this Section are approved for use with the existing system.

- E. Contract Closeout Submittals

1. Contractor's 2-year guarantee
2. For warranted systems, letter from manufacturer that the Work of this Section has not voided the existing warranty.

1.04 QUALITY ASSURANCE

- A. Roofing Installation Qualifications

1. Roofing Firm Qualifications

- a. Installation of a minimum of ten built-up roofing systems of 3-ply (or greater) membranes.

(List last five such jobs, including address, type of system and number of plies, if applicable, square footage, date installed and owner/agent with whom contracted).

- b. In continuous operation of installing such roofing systems for five years or more.
- c. Certified installer for nationally recognized roofing materials manufacturer.

2. Project Foreman Qualifications

(Note: For field foremen to be assigned to this Project, identify and substantiate).

- a. Installation of a minimum of five built-up roofing systems of 3-ply (or greater) membrane, or of roofing system specified in the Contract Documents, for which this individual served as field foreman in direct responsible charge of all roofing work crews.

(Note: List last five such jobs, including address, type of system and number of plies, if applicable, square footage, date installed and owner/agent with whom contracted, and name of roofing firm with which employed).

- b. Successful completion of a formal instructional and training program for the installation of the specified roofing systems, as evidenced by:
 - 1) A certificate of journeyman roofer as issued under a union apprenticeship-journeyman training program duly registered with the New York State Department of Labor (or other State Labor Department); or
 - 2) A certificate or diploma issued by a vocational training school or national roofing manufacturer attesting to successful completion of an equivalent formal training program, (Submit copy of certificate for above); or

- 3) A minimum of five years of practical experience in the installation of all aspects and details of the specified roofing system(s) including related sheet metal work as determined from a pre-qualification interview conducted by the Fund's Representative.

B. Fire Department Regulations

Equipment and fuel shall meet the requirements of the Fire Code of New York State. Hot roof kettles may not be placed on the roof.

C. Company Field Advisor

Secure the services of a Company Field Advisor of the membrane manufacturer for a minimum of 4 working hours. The Field Advisor shall be present at the Pre-Installation Conference and at the beginning of the actual membrane installation for the purpose of:

1. Rendering technical assistance to the Contractor regarding installation procedures of the system.
2. Familiarizing the Fund's Representative with all aspects of the system including inspection techniques.
3. Answering all questions which might arise.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to the site in the manufacturer's labeled, unbroken containers.
- B. Storage and Handling: Store materials in a dry, well ventilated place protected from the weather.
 1. Volatile liquids shall be stored in a separate storage building or trailer, or removed from the Site at the end of each work day.
 2. Store volatile liquids at temperatures recommended by the manufacturer.

3. Store adhesives at temperatures between 60°F and 80°F.

1.06 PROJECT CONDITIONS

- A. Do not execute the Work of this section unless the Fund's Representative is present, or unless the Representative directs that the Work be performed during the Representative's absence.

- B. Temperature

Do not apply built-up roofing when the deck or air temperature is below 40°F.

- C. Do not execute the Work of this Section unless the substrate is dry, and free from debris and dust.

- D. Moisture Protection

1. Cover, seal or otherwise protect the roof and flashings so that water cannot accumulate or flow under completed portions. When and where necessary to accomplish this, provide temporary water cut-offs in accordance with the membrane manufacturer's written specifications.

2. Limit the removal of existing materials to areas that can be completely re-roofed or temporarily protected within the same day.

1.07 GUARANTEE AND WARRANTY

- A. Contractor's Guarantee

Two year written guarantee covering defects in materials and/or workmanship. Performance Bond shall be for the entire two-year period. Also includes repair to all ancillary areas damaged due to leaks.

- B. Manufacturer's Warranty

Roofs under warranty shall have work done under the auspices of the roof manufacturer holding such warranty to maintain the existing warranty.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Asphalt Primer and Asphalt
 - 1. GAF Building Materials Corp., Wayne, NJ.
 - 2. Johns Manville, Denver, CO.
 - 3. CertainTeed Corporation, Valley Forge, PA
 - 4. Trumbull/Owens Corning, Toledo, OH
- B. Primer for cold repair system
 - 1. Johns Manville PermaFlash™ Primer
- C. Base Sheet
 - 1. GAF GAFGLAS #75 Base sheet.
 - 2. Johns Manville GlasBase.
 - 3. CertainTeed Glasbase Base Sheet
 - 4. Firestone MB Base M.
- D. Vent Base Sheet
 - 1. GAF GAFGLAS Stratavent Eliminator Base Sheet.
 - 2. Johns Manville Ventsulation.
 - 3. CertainTeed Channel Vent Base Sheet
 - 4. Firestone Venting Base
- E. Ply Sheets, Vapor Barrier and Cover Strip
 - 1. GAF GAFGLAS FlexPly 6.
 - 2. Johns Manville GlasPly Premier.
 - 3. CertainTeed FlintGlas Premium Ply Sheet Type VI.
 - 4. Firestone Ply VI M.

F. Granule Surfaced Modified Bitumen Roofing Membrane Cap Sheet

1. White cap sheet
 - a. GAF Ruberoid EnergyCap SBS 30 FR.
 - b. Johns Manville Dynaglas FR CR
 - c. CertainTeed Flintlastic FR-P CoolStar

G. Modified Bitumen Base sheet

1. Johns Manville DynaBase Base sheet.

H. Insulation

1. Composite Insulation Board
 - a. GAF EnergyGuard Composite Board Insulation
 - b. Johns Manville Fesco Foam Polyisocyanurate
 - c. AC Foam II with 1/2" perlite on top, by Atlas Energy Products, Atlanta, GA.
 - d. CertainTeed Flintboard Iso Plus Composite
 - e. Firestone ISO 95+ Composite
2. Isocyanurate Insulation Board
 - a. EnergyGuard PolyiIso Insulation by GAF.
 - b. ENRGY 3 Polyisocyanurate by Johns Manville.
 - c. AC Foam II by Atlas Energy Products, Atlanta GA.
 - d. CertainTeed Flintboard Iso
 - e. Firestone ISO 95+ GL
3. Top Layer of Three Layer System
 - a. 1/2" High-density fiberboard or EnergyGuard Perlite by GAF.

- b. 1/2" Retro-fit Board by Johns Manville.
- c. 1/2" Perlite Board by Atlas.
- d. 1/2" FiberTop by Firestone.

I. Base Flashing

- 1. Two base plies:
 - a. GAF GAFGLAS FlexPly 6.
 - b. Johns Manville GLasPly Premier.
 - c. CertainTeed FlintGlas Premium Ply Type VI.
 - d. Firestone Ply VI M.
- 2. One ply cap sheet:
 - a. GAF Ruberoid EnergyCap SBS 30 FR.
 - b. Johns Manville Dynaflex CR.
 - c. CertainTeed Flintlastic FR-P CoolStar.
 - d. Firestone SBS Premium

J. Liquid flashing system for curb flashing and penetrations

- 1. Johns Manville, PermaFlash™ penetration flashing and low flashing system.

K. Two component, solvent free, elastomeric, cold application adhesive for repairs

- 1. Johns Manville, Bonding Adhesive

L. Emulsion and Aluminized Coating

- 1. GAF
- 2. Johns Manville
- 3. CertainTeed

4. Firestone

M. Flashing Cement

1. Johns Manville MBR two-part Flashing Cement or Type III Steep Asphalt (or equivalent by GAF, Firestone, or CertainTeed).

N. Warrantable Penetration Seal, Penetration Flashing, and Low Flashing Materials

1. M-weld Roofing Systems-Building Solutions, "M-Curb System" penetration seal system.
2. WTT Systems, "Weather-Tite Lockin Pocket" with "Weather-Tite Hurricane Force Universal Sealer" and "Weather-Tite LPS Sealant" penetration seal system.
3. Kemco, "Kemperol BR" penetration flashing and low flashing system.
4. Johns Manville, "PermaFlash" penetration flashing and low flashing system.
5. Triflex, "Triflex D" penetration flashing and low flashing system.
6. Applied Liquid Technologies, "Protec" penetration flashing and low flashing system.
7. Thermo Manufacturing Systems, "Thermo SEBS System" penetration flashing and low flashing system.
8. Sika/Liquid Plastics, "Decothane SP" penetration flashing and low flashing system.

O. Walkway Pads/Splash Pads/Protection Pads

1. Celotex Corp. "Carey-tred".
2. W.R. Meadows Inc. "Sealtight Whitewalk".
3. Termastic Construction Materials "Roof Walk".

P. Elastomeric Cement

1. Tremco Manufacturing Co. "Poly roof".
2. Durok Bldg. Materials "Durok Rubber Cement".
3. Karnak Chemical Corp. "AR Elastomeric".
4. Firestone S-10 Pourable Sealer.

Q. Perlite Cant Strip

1. GAF
2. Johns Manville
3. Atlas

R. Premanufactured Expansion Joint Flashing at Wall and Roof Expansion Joint

1. Johns Manville

2.02 MATERIALS - HOT-APPLIED SYSTEMS

A. In the case of an existing roof with warranty in effect, provide all the materials required to complete the Work of this Section. All materials shall be approved by the existing roof system manufacturer.

B. Asphalt Primer; Quick drying; ASTM D41.

C. Steep Asphalt: ASTM D312, Type III.

D. Coatings:

1. Asphalt emulsion, fibrated; ASTM D1227, Type IV.
2. Aluminum roof coating, fibrated; ASTM D2824.
3. Urethane elastomer, single component, white or light grey.

E. Modified Flashing Cement: MBR Flashing Cement - two-component, elastomeric, liquid applied flashing material, consisting of an asphalt/urethane base material and an activator.

F. Elastomeric Cement: Urethane, Neoprene or Polysulfide elastomer, trowel grade, non-sag with a minimum of 300 percent expansion and 95 percent recovery when cured.

1. "Polyroof" by Tremco.
2. "Durok Rubber Cement" by Durok.
3. "Polyseal" by Monroe.

G. Felts:

1. Asphalt Fiberglass Felt: Asphalt impregnated glass mat, ASTM D2178, Type VI. UL Classified.
2. Flashing Cap Sheet: Reinforced modified cap flashing sheet, specifically designed by the manufacturer for use as the top ply of built-up flashings. UL Classified.
3. Asphalt Fiberglass Venting Base Sheet: One ply composed of glass mat with coating asphalt and a coarse mineral surfacing on one side of sheet; ASTM D3672 or D4897, Type II
4. Mineral-Surfaced Modified Bitumen Cap Sheet: Fire resistant, coated granule surfaced modified bitumen sheet containing a core of glass fiber or polyester mat coated with flexible SBS polymer-modified asphalt. Conforming to or exceeding the requirements of ASTM D6163, or D6164, Type I Grade G. UL Classified. Initial Solar Reflectance 0.75 minimum, in accordance with Cool Roof Rating Council. Solar Reflectance Index **82** minimum, in accordance with ASTM E1980.

H. Glass Fabric, 20/20 woven mesh, resin or asphalt coated; ASTM D1668.

I. Polyisocyanurate roof insulation board. Thickness to match the existing roof insulation.

J. Materials for Penetration Seals, Penetration Flashing, Low Flashing, and Pitch Pockets

1. Warrantable penetration seals, penetration flashing, and low flashing shall be of materials described in subparagraph a., b., c., d. or e.,

below, as deemed appropriate by the roofing manufacturer and shall be included in their 20-year warranty. Verify with roofing manufacturer which system is appropriate for the proposed application and is included in the warranty. Provide primers, mineral granule surfaced target patches, catalysts, and other auxiliary materials to complete each system in accordance with requirements of the seal and flashing system manufacturer and the roofing system manufacturer.

- a. Warrantable penetration seal: M-Curb System, consisting of a preformed structural urethane outer shell filled with a two-part urethane rubber sealant such as M-Thane. A structural high viscosity urethane adhesive such as M-Bond shall be used to bond the shell to the roof deck as well as seal the edges.
- b. Warrantable penetration flashing and low flashing: Kemporol BR system, consisting of polyester fleece-reinforced two-component polyester resin membrane.
- c. Warrantable penetration flashing and low flashing: Johns Manville PermaFlash system, consisting of polyester fabric-reinforced two-part asphalt modified urethane flashing membrane.
- d. Warrantable penetration flashing and low flashing: Triflex D system, consisting of polyester fleece-reinforced two-component polyester resin membrane.
- e. Warrantable penetration flashing and low flashing: Applied Liquid Technologies Protec system, consisting of glass fiber fabric reinforced two-component polyester resin membrane.

2.03 MATERIALS - COLD-APPLIED SYSTEMS

- A. In the case of an existing roof with warranty in effect, provide all the materials required to complete the Work of this Section. All materials shall be

approved by the existing roof system manufacturer.

B. PermaFlash Primer; organo-silane compound dispersed in isopropyl alcohol

C. PermaFlash: Liquid flashing system Two-Part adhesive reinforced with a polyester scrim

1. MBR Flashing Cement: Two-component, elastomeric, liquid applied flashing material, consisting of an asphalt/urethane base material and an activator. MBR Flashing Cement is also used in the JM PermaFlash™ Bituminous Flashing System for penetrations and other details.

a. Typical Physical Properties

ASTM D412, Tensile Strength: 600 psi (4.13 MPa)

ASTM D412, Elongation: > 300%

ASTM E96 Method E [100°F (38°C), 100 mil (2.5 mm) sheet], Permeability to Water Vapor: 0.03 perms

Working Time* @ 75°F (25°C): 30 min

Rainproof After* @ 75°F (25°C): 4 h

ASTM D2240, Hardness @ 77°F (25°C): 65 Shore A

Crack Bridging After Heat Aging: 1/8" (3 mm)

ASTM D36, Softening Point, Ring and Ball: 275°F (135°C)

ASTM C836 Elastomeric Waterproofing: Exceeds All Criteria

ASTM D4060, Abrasion Resistance [1,000 gr./1,000 rev., CS-17 wheel]: 1.2 mg Loss

D. Bonding Adhesive:

1. Two-component, solvent free, elastomeric, cold application adhesive, consisting of an asphalt base material and an activator.

E. Modified Flashing Cement

1. MBR is a two-component, elastomeric, liquid applied flashing material, consisting of an asphalt/urethane base material and an activator.

F. Felts:

1. Asphalt coated Fiberglass Base Felt: A wet process fiber glass mat coated with weathering

grade asphalt and then surfaced with a fine mineral parting agent. ASTM D4601, Type II

2. Flashing Cap Sheet: Reinforced modified cap flashing sheet, specifically designed by the manufacturer for use as the top ply of built-up flashings. UL Classified.
3. Mineral-Surfaced Modified Bitumen Cap Sheet: Fire resistant, coated granule surfaced modified bitumen sheet containing a core of glass fiber or polyester mat coated with flexible SBS polymer-modified asphalt. Conforming to or exceeding the requirements of ASTM D6163, or D6164, Type I Grade G. UL Classified. Initial Solar Reflectance 0.75 minimum, in accordance with Cool Roof Rating Council. Solar Reflectance Index **82** minimum, in accordance with ASTM E1980.
4. Modified Bitumen Base Sheet: A modified bitumen sheet incorporating the features of a medium weight fiber glass mat with a blend of SBS (Styrene-Butadiene-Styrene) rubber and high quality asphalt. Conforming to or exceeding the requirements of criteria for ASTM D6163, Type I, Grade S. Thickness of 90 Mils. UL Classified.

G. Materials for Penetration Seals, Penetration Flashing, Low Flashing, and Pitch Pockets

1. Warrantable penetration seals, penetration flashing, and low flashing shall be of materials described as deemed appropriate by the roofing manufacturer and shall be included in their warranty. Verify with roofing manufacturer which system is appropriate for the proposed application and is included in the warranty. Provide primers, mineral granule surfaced target patches, catalysts, and other auxiliary materials to complete each system in accordance with requirements of the seal and flashing system manufacturer and the roofing system manufacturer.
 - a. Warrantable penetration flashing and low flashing: Johns Manville PermaFlash system, consisting of polyester fabric-reinforced

two-part asphalt modified urethane flashing membrane.

2.04 INSULATION

A. Provide type and thickness of insulation to match existing. If insulation is of a type not specified below, utilize polyisocyanurate. Polyisocyanurate insulation shall have a 15-year time weighted average Long Term Thermal Resistance (LTTR) value of at least **5.7** for each inch of insulation thickness, as determined in accordance with ASTM C1289 or CAN/ULC-S770 (Standard Test Method for Determination of Long Term Thermal Resistance of Closed Cell Thermal Insulating Foams). Perlite and fiberboard shall have an R-value of at least 1.3 for 1/2" thickness.

1. Types

- a. Polyisocyanurate - ASTM C1289, Type II, Class 1, Grade 2
- b. Perlite - ASTM C728
- c. Fiberboard - ASTM C208

2. All insulation: Factory Mutual, Class 1 or U.L. Class A.

B. Rigid Insulation

Provide insulation using one of the assemblies described below in subparagraph 1. or subparagraph 2.

1. Three Layers of Insulation:

Three layers of insulation consisting of two layers of polyisocyanurate insulation, and a top layer of fiberboard or perlite insulation.

- a. Polyisocyanurate Insulation: Closed cell polyisocyanurate foam core skinned on both sides with factory applied facers of the generic type recommended by the membrane manufacturer. ASTM C1289, Type II, Class 1, Grade 2. UL Classified. Thickness of bottom layer shall be 2". Thickness of

second layer shall be not less than 1.5" and not more than 2". Board size 48"x48" maximum.

1) For steel decks: Factory Mutual Class 1 approved for direct application on steel decks.

b. Top layer: 1/2" thick minimum. Perlite board insulation complying with ASTM C728. Fiberboard complying with ASTM C208. UL Classified.

Provide additional layers of polyisocyanurate insulation where required to meet indicated thermal insulating values, subject to approval of the membrane manufacturer and the Project Architect or Engineer. Total thickness of insulation shall be as indicated on the Drawings.

2. Two Layers of Insulation:

Two layers of insulation consisting of one layer of polyisocyanurate insulation, and a top layer of composite insulation. Board size 48"x48" maximum.

a. Base layer: Closed cell polyisocyanurate foam core skinned on both sides with factory applied facers of the generic type recommended by the membrane manufacturer. ASTM C1289, Type II, Class 1, Grade 2. UL Classified. Thickness 2".

b. Top layer: A layer of polyisocyanurate foam integrally bonded to a layer of perlite or wood fiberboard on one side and a nonasphaltic fiberglass mat on the other. Total thickness of top layer 1.5" minimum, 2.5" maximum.

Provide additional layers of polyisocyanurate insulation where required to meet indicated thermal insulating values, subject to approval of the membrane manufacturer and the Project Architect or Engineer. Total thickness of insulation shall be as indicated on the Drawings.

2.05 MATERIALS - MISCELLANEOUS

- A. Cant, pre-formed treated fiber, 4" standard size.
- B. Wood Nailers: Preservative (pressure) treated construction grade lumber or construction grade cedar, redwood or cypress.
- C. Sheet Metal
 - 1. 16 oz. cold rolled copper.
 - 2. 16 oz. zinc/tin alloy coated hot-dipped cold rolled copper.
 - 3. 26 ga. stainless steel, flashing grade.
 - 4. Sheet Lead: ASTM B29. Minimum Wgt. 4 lbs per sq ft.
- D. Fasteners
 - 1. Expansion bolts, cadmium plated, 3/8" diameter.
 - 2. Machine bolts, cadmium plated, 3/8" diameter.
 - 3. Sheet metal screws, #8, pan head.
 - a. Stainless steel.
 - b. Cadmium plated steel.
 - 4. Wood screws, #8, round head.
 - a. Brass or bronze.
 - b. Cadmium plated steel
 - 5. Roofing nails, "Stronghold" type with large head, 12 ga.
 - a. Copper.
 - b. Stainless steel.
 - c. Galvanized steel.
- E. Precast Concrete Pavers Ballast: 8500 psi min. compressive strength, nominal dimensions 2'x2'x 2.25" thick, 27 lb/sf minimum weight. Provide integral pedestal type where recommended by membrane manufacturer. Where integral pedestals are not used, provide plastic paver support pedestals and shims, with protection beneath the pedestal as recommended by the membrane manufacturer. Air space under pavers shall be at least 0.25", and additional space shall be provided if recommended for ventilation by the insulation manufacturer. Paver color shall be white. Texture as selected by Project Architect. Pavers shall have a Solar Reflectance Index (SRI) of 82 minimum when tested

in accordance with ASTM E1980. Pavers utilized in roof top playgrounds shall have a three-year aged Solar Reflectance (SR) of 0.28 or a minimum initial Solar Reflectance of 0.33 as determined in accordance with ASTM C1549 or ASTM E1918, with color as selected by the Architect.

- F. Protection Pads: "Carey Tread" by Celotex, "Sealtight Whitewalk" by W.R. Meadows, or "Roof Walk" by Texmastic Construction Materials.
- G. Pre-manufactured Equipment Curbs: Prefabricated roof curbs shall be of box section design, constructed using minimum 18 gauge galvanized steel, (14 gauge for curbs supporting HVAC units or as required) with fully mitered and welded corners, 3" cant. Roof Curbs shall be internally reinforced on any side longer than 3' 0" and shall have factory internal base plate. Roof Curbs to be insulated with 1 1/2" thick 3lb. density fiberglass insulation, and factory installed wood nailers fastened from underside with TEK screws. Height to be 8" above the finished roof or as detailed. Roof Curbs shall be level at the top with pitch built-in when deck slopes 1/4 of an inch per foot or greater, or as detailed. Prefabricated Roof Curbs shall be manufactured by Roof Products & Systems Corporation, Bensenville, IL. or equal. Contractor fabricated Roof Curbs will not be accepted
- H. Premanufactured Equipment Rails: Equipment Rails shall be manufactured of 18 or 14 gauge galvanized steel as required. Fully mitered and welded corners, 3" cant. Equipment Rails shall be internally reinforced with integral base plate and factory installed wood nailer. (Specify 2x4,6,8,10,12). Height to be 8" above finished roof or as detailed. Equipment Rails shall span a minimum of two (2) roof members and not cantilever more than 6". Equipment Rails shall be level at the top with pitch built-in when deck slopes 1/4 of an inch per foot or greater, or as detailed. Equipment Rails shall be manufactured by Roof Products & Systems Corp., Bensenville, IL. or equal. Contractor fabricated Equipment Rails will not be accepted.
- I. Premanufactured Pipe Portals: The pipe portal shall include an 18 gauge galvanized steel roof curbs with

integral base plate, continuously welded corner seams, factory-installed wood nailer and 1½" 3lb. rigid fiberglass insulation. The pipe portal shall be furnished with a laminated acrylic coated ABS plastic curb cover with prepunched holes and molded sealing ring on an 8" collared opening, and an EPDM compression molded cap with stainless steel snaplock clamps. Curbs covers shall be resistant to ozone and ultraviolet rays and shall have a serviceable temperature range of -40°F to positive 250°F. The molded sealing ring on the collared opening and the groove in the rubber cap shall be installed to assure a weather-tight pressure and mechanical seal. The protective rubber caps shall have a serviceable temperature range of -60°F to positive 250°F and shall be resistant to ozone and ultraviolet rays. The conical shaped steps of the nipple shall provide a weatherproof seal around the penetration. The stainless steel snaplock clamps shall provide added protection to guarantee the seal. Pipe Portal shall be provided with the number of caps as shown on the drawings and shall be as manufactured by Roof Products & Systems Corporation, Bensenville, IL. or equal.

2.06 PRE-INSTALLATION CONFERENCE

- A. Before the roofing Work is scheduled to commence, a conference will be called by the Fund's Representative at the site for the purpose of reviewing the Drawings and the Specifications and discussing requirements for the Work. The conference shall be attended by the Contractor, the authorized roofing applicator, the membrane manufacturer's Company Field Advisor, the Architect and the Fund.
- B. In order to maintain the existing warranty, prior to the conference the Contractor shall have registered the project with the membrane manufacturer and shall have submitted the membrane manufacturer's letter of intent to warranty the project. A copy of the letter is to be brought to the conference.
- C. The Consultant will specify the milestone inspection requirements e.g. initial substrate approval, moisture verification and/or testing and vapor barrier installation in the pre-installation conference.

PART 3 - EXECUTION**3.01 VERIFICATIONS OF CONDITIONS****A. Testing Existing Roof Drains and Conductor Pipes**

Before commencing with the Work, water test all existing drains and conductor pipes, submit a written report to the Fund's Representative, indicating which drains or conductors, if any, are not functioning properly.

1. If repairs or other corrective Work are required, the Fund may, at its option, initiate a change order for such Work.

3.02 PREPARATION - HOT-APPLIED SYSTEM

- A. Moisture Protection: Keep the roof waterproof. Limit removals of existing materials to areas that can be either completed or temporarily sealed before the end of each workday.
- B. Limit the removal of existing materials to the absolute minimum that is necessary to install the new Work.
- C. Spud off all aggregate from existing roof surfaces that will be bonded to new materials.
- D. Thoroughly clean, dry, and prime all existing roof surfaces that will be bonded to new materials.
- E. Where existing insulation is removed to install nailers, do not remove the existing vapor seal. Patch with asphalt cement and asphalt fiberglass felts if damaged.
- F. Heating Bitumen
 1. Preparation
 - a. Use separate kettles or tankers for heating different types of asphalt. Kettle may not be placed on roofs.

- b. The heating process shall be strictly regulated by means of an automatic thermostatic control of an approved type for positive temperature control. Kettles or tankers shall be the immersion tube type, fire by Liquid LP gas, and shall have 100% safety shutoff.
- c. Equip each kettle or tanker with a recording thermometer that will graphically indicate and record on a chart the maximum and minimum temperatures to which materials have been heated. Recording thermometers shall be capable of accurately recording temperatures as high as 600°F and as low as 0°F. The thermometers shall be properly maintained at all times. Kettles or tankers without recording thermometers in good working condition shall not be used. At the end of each working day, turn the chart from the thermometer on each kettle or tanker over to the Fund's Representative. If any bitumen is overheated, remove it from the site in the presence of the Fund's Representative.

If any underheated or overheated bitumen has been applied on the roof, remove that portion of the roof.

- d. Kettle is to placed on the ground, with the asphalt pumped to the roof.
 - 1) Provide fire extinguishers on the roof in the vicinity of the work as required to ensure the safety of the roof.
 - 2) In all cases comply with requirements of the Fire Code in locating equipment.

2. Heating Asphalt Bitumen

- a. Heat the bitumen in accordance with the Equiviscous Temperature information furnished by the bitumen manufacturer for that specific run of bitumen.

- 1) In no case shall be asphalt be heated to or above the actual COC Flash Point (ANSI/ASTM D92); or the finished blowing temperature for more than 4 hours.
- 2) Maintain the temperature of the bitumen at the point of application within the Equiviscous Temperature Range. Use insulated pipes, buckets, luggers, and other insulated roofers equipment as required by the field conditions.

Contractor must have at least one hand held thermometer for each crew installing hot asphalt in order to ensure compliance with EVT.

2. Application temperature: The accepted application temperature range for asphalt is the equiviscous temperature, (EVT) $\pm 25^{\circ}\text{F}$. All felt installation must occur in this range to be acceptable.

3.03 PREPARATION - COLD-APPLIED SYSTEM

- A. Bituminous and Modified Bituminous Membranes - Basic Cold Process Repair Techniques
 1. Moisture Protection: Keep the roof waterproof. Limit removals of existing materials to areas that can be either completed or temporarily sealed before the end of each workday.
 2. Limit the removal of existing materials to the absolute minimum that is necessary to install the new Work.
 3. Gravel Surfaced Bituminous membrane system - Spud off all aggregate from existing roof surfaces that will be bonded to new materials. Clean and dry surfaces approximately 12" to either side of damaged area. On aggregate surfaced roofs, the surfacing should be chipped away down to the felts.

4. Thoroughly clean, dry, and prime all existing roof surfaces that will be bonded to new materials. Prepare surfaces with brush application of bituminous primer.
5. Modified Bituminous membrane system - Remove damaged material, clean surfaces to be bonded. Wire brush elastomeric surfaces to remove oxidized layer, wipe with ether or acetone to remove surface moisture. Prepare surfaces with brush application of bituminous primer.
6. Where existing insulation is removed to install nailers, do not remove the existing vapor seal. Patch with asphalt cement and asphalt fiberglass felts if damaged.

B. PermaFlash™ System

1. Surface Preparation - All surfaces to receive the PermaFlash System must be clean, dry and free of any dirt, dust, debris, rust, and oils. Remove contaminants such as oils with a suitable solvent cleaner. For best results it is recommended that surfaces such as metals and plastics be abraded. Mask off with tape any areas not intended to receive the MBR Flashing Cement.

C. MBR Flashing Adhesive Preparation

1. The adhesive is prepared in the MBR Flashing Cement Base 5 gal (18.92 l) pail, using the appropriate mixing equipment mentioned. MBR Flashing Cement Activator is packaged in premeasured containers with the exact amount of material necessary to react with the contents of the corresponding MBR Flashing Cement Base.
2. Continuously move the mixer in an up-and-down and side-to-side motion.
3. Do not dump the activator into the pail in one motion. To produce a complete mix, pour the MBR Flashing Cement Activator slowly into the vortex caused by the rotating mixer.

4. The mix is complete in three minutes. Do not under mix the batch. Over mixing will reduce working time.
5. Do not stockpile adhesive, since the material will cure to an unworkable consistency!
6. The pot life is dependent on the ambient temperature; extremes in temperature can shorten the pot life of the mix. The mechanic will have to use the mixed material in approximately:

Temperature (°F)	50	60	70	80	90	100
(°C)	10	16	21	27	32	38
Minutes	20	25	30	30	30	25

7. Time the mixing of individual pails of adhesive so that only one can of freshly mixed adhesive is ready for each application crew. In cold weather, store and mix the material at room temperature.

D. MBR Bonding Adhesive Preparation

1. JM MBR Bonding Adhesive is prepared on site by adding specific pre-measured amounts of JM MBR Bonding Adhesive Activator and mixing for a minimum of three minutes. The adhesive is prepared in the MBR Bonding Adhesive container, a 6 gal (22.7 l) pail, with the use of an 8" (203 mm) mud mixer mounted on a ½" (13 mm) electric drill motor.
2. The container of MBR Bonding Adhesive Activator (0.60 gal [2.3 l]) is packaged to provide exactly the correct amount of material necessary to react with the contents of MBR Bonding Adhesive Base (4.4 gal [16.7 l]), resulting in 5 gal (18.9 l) of total mixed product. The activator is heavier and has a lower viscosity than the base material.
3. To produce a complete mix, the MBR Bonding Adhesive Activator must be poured slowly into the vortex caused by the rotating mixer. The activator must not be dumped into the pail in one motion.

4. The mixer should be constantly moved about the pail in an up-and-down and side-to-side motion. The mix is complete in 3 minutes. Do not under mix.
5. The adhesive has a pot life that is dependent on the ambient temperature. The applicator will have to use the mixed material in approximately:

Temperature (°F)	50	60	70	80	90	100
(°C)	10	16	21	27	32	38
Minutes	55	50	45	40	35	30

6. The mixing of individual pails of adhesive should be timed so that one can of freshly mixed material is ready for the application crew. Mixed adhesive must not be stockpiled, since the material will cure to an unworkable viscosity before the application crew can use it.

3.04 CURB INSTALLATIONS

- A. Install prefabricated curbs and pipe portals as per manufacturer's instructions and in a setting bed of modified flashing cement. Mechanically anchor using adhesive anchors.

3.05 INSTALLATION - HOT-APPLIED SYSTEM

- A. Wood Nailers: Set each nailer into a full bed of asphalt plastic cement and secure with bolts (at least two each side) to the deck. Fill voids (if any) between the nailer and the existing insulation with roof insulation, set in plastic asphalt cement. Set fiber cants in plastic asphalt cement.
- B. Roof Membrane Repairs: Patch the roof membrane with alternating layers of asphalt and felt for a minimum of 4 plies. Install the necessary number of plies to finish above the adjacent roof membrane level to eliminate water ponding low spots. Match the existing system in terms of installing vapor barrier, vent base sheet mechanically fastened, if any, and insulation.
 1. Make all felt laps at least 4" wide.

2. After matching existing adjoining roof level, assure that at least four (4) plies of felt are lapped out onto the existing roof membrane by a minimum of 8". Envelope insulation with Type VI felt plies. First ply of the roofing membrane shall lap over existing adjacent membrane a minimum of 6". Lap all other plies over the preceding a minimum of 6".
3. At metal base flashings, turn felts up on the vertical at least 4".
4. At fiber or metal cants, carry the last 4 plies to the top of the cant.
5. If existing roof is aggregate surface, install aggregate at a rate of 600 lbs/square in asphalt.

C. Built-up Flashing:

1. Prime curb surfaces.
2. Install two plies of asphalt fiberglass felt and one ply of flashing cap sheet, each in a full bed of modified flashing cement.
3. Secure top edge of flashing with fasteners placed at 6" centers.
 - a. To Wood: Use roofing nails thru 1½" diameter metal disks.
 - b. To Sheet Metal: Use sheet metal screws thru 1½" diameter metal disks.
4. Seal top edge with modified flashing cement and fabric.
5. Finish the built-up flashing and adjacent roof surface (including all spudded areas) as follows:
 - a. For Existing Aggregate Surface: Apply heavy brush coat of asphalt to cant and vertical flashing surfaces. On horizontal surfaces, embed aggregate in a 1/4" thick troweling of asphalt compatible with the existing roofing.

D. Elastomeric Flashing

1. Prime metal surfaces with quick drying asphalt primer. Let dry to the touch.
2. Fully embed strips of glass fabric in elastomeric cement trowelings to obtain a 5 course membrane with a minimum thickness of 1/4".
3. Finish the flashing with a final smooth troweling of elastomeric cement to hide all fabric. Cover horizontal (spudded) roof surfaces with manufacturers white roof coating.

E. Metal Base Flashing

1. Provide metal base flashing as shown on the Drawing and as follows:
 - a. Lock and solder all joints.
 - b. Hem flange edge 1/2".
 - c. Set flange in full bed of plastic cement.
 - d. Secure with roofing nails placed at 3" (staggered) centers.
 - e. Install two felt fiberglass coverstrips, 8" and 12" wide, in a full bed of plastic cement.
 - f. Finish with aggregate embedded in 1/4" thick troweling of plastic cement.

F. Metal Cap Flashing

1. Provide metal cap flashing as shown on the Drawing and as follows:
 - a. Lock and solder all joints.
 - b. Provide minimum of 3" lap over base flashing.
 - c. Turn flange over top of curb and turn edge up at least 1" behind ventilator housing.
 - d. Seal all penetrations (ventilator housing bolts) with silicone sealant.

3.06 INSTALLATION - COLD-APPLIED SYSTEM, MODIFIED BITUMEN MEMBRANE

- A. Wood Nailers: Set each nailer into a full bed of MBR Flashing Adhesive and secure with bolts (at least two each side) to the deck. Fill voids (if any) between the nailer and the existing insulation with roof insulation, set in plastic asphalt cement. Set fiber cants in MBR Flashing Adhesive.
- B. Roof Membrane Repairs - Patch the roof membrane with alternating layers of MBR Bonding Adhesive and layers of fiberglass reinforced base sheet for a minimum of 3 plies. Install the necessary number of plies to finish above the adjacent roof membrane level to eliminate water ponding low spots. Match the existing system in terms of installing vapor barrier, vent base sheet mechanically fastened, if any, and insulation.
- C. Install modified bituminous roofing membrane sheet and cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants as follows:
 - 1. Adhere to substrate in a approved cold applied adhesive.
 - 2. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.
- D. Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Completely bond and seal laps, leaving no voids.
 - 1. Repair tears and voids in laps and lapped seams not completely sealed.
 - 2. Apply roofing granules to cover exuded bead at laps while bead is hot.
- E. Install roofing membrane sheets so side and end laps shed water.

- F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.07 FLASHINGS

A. Fluid-Applied Flashing System - Based on Perma-flash

1. PermaFlash primer Application - Shake bottle vigorously for 3-5 seconds prior to opening. All non-porous surfaces to receive MBR Flashing Cement should be primed *no more* than 1 hour prior to application. PermaFlash Primer can be wiped on with a cloth rag. Surfaces only need to be wiped once. Replace soiled rags with clean rags as necessary. Wiping on the PermaFlash Primer also helps to clean the surface. PermaFlash Primer may also be applied with spray bottles or Hudson type sprayers. Apply only a light mist when spraying. Do not over apply, creating puddles or runs. The PermaFlash Primer will flash off (dry) almost immediately. PermaFlash Primer *must* be dry prior to applying MBR Flashing Cement.
2. Lay out reinforcement fabric around penetration and cut to fit. Wrap fabric around penetration and bridge all vertical to horizontal transitions.
3. Apply fluid-applied flashing directly to prepared substrate. Adhere fabric by pressing into the fluid-applied flashing while still wet.
4. Completely cover fabric with at least 60 mil coat wet film thickness of fluid-applied flashing, and as required by the manufacturer.
5. Extend top coat of fluid-applied flashing system 2 inches beyond edges of reinforcement fabric.

B. Built-up Flashing

1. Prime curb surfaces.
2. Install two plies of asphalt fiberglass felt and one ply of flashing cap sheet, each in a full bed of modified flashing cement or hot asphalt.

3. Secure top edge of flashing with fasteners placed at 6" centers.
 - a. To Wood: Use roofing nails thru 1 $\frac{1}{2}$ " diameter metal disks.
 - b. To Sheet Metal: Use sheet metal screws thru 1 $\frac{1}{2}$ " diameter metal disks.
4. Seal top edge with modified flashing cement and fabric. Seal all seams with modified flashing cement.
5. Finish the built-up flashing and adjacent roof surface (including all spudded areas) as follows:
 - a. For Existing Aggregate Surface: Apply heavy brush coat of asphalt to cant and vertical flashing surfaces. On horizontal surfaces, embed aggregate in a 1/4" thick troweling of asphalt compatible with the existing roofing.

3.08 FIELD QUALITY CONTROL

- A. Progress inspections of the roofing system installation by CID's Inspector, including reviewing the temperature charts, will be done on regular visits. Roofing deficiencies are to be addressed for compliance verification prior to proceeding with the next phase of the system installation.
- B. Test Strip (if requested by the Consultant)
 1. When and where directed by the Fund's Representative, and before surfacing is applied to the completed membrane, cut a strip 3" wide by 40" long thru all plies of the built-up roofing. Number of such test strips may be as required by the Representative. After removal of the strip, immediately repair the area by applying the same number of plies of the same kind of sheets and bitumen to fill the hole level. Repeat the same number of plies of the same kind of sheets and bitumen over the filled strip with the first ply lapping each edge 12" and each succeeding ply lapping the preceding ply by at least 3" on all

edges. Apply surfacing material to match the adjoining roof. Turn the test strips over to the Fund's Representative for examination.

2. If the test strips indicate the roofing system complies with the Specifications, the Fund will bear the cost of the test strip Work.
3. If the strips indicate the roofing system does not comply with the Specifications, the Contractor shall bear the cost of the test strip Work, and shall repair or replace all roofing Work as required to comply with the Specifications, at the Contractor's expense.
4. Failure of the test strip samples to meet the Specification requirements will be cause for rejection of the Work.

3.09 FLOOD TESTING

- A. After completion of roofing work specified above, a flood test shall be performed. The flood test shall include the area of new work and extend at least an additional 4 feet past the transition to the existing membrane. The area shall be flooded with a minimum of 1" of water above the high points by providing temporary barriers. Water shall remain for a minimum of 24 hours. For each flood test performed, the Contractor shall notify the Fund's field representative when the minimum 1" of water above high point has been reached to mark the start of test period for verification and notification to the Fund's Representative to allow for inspection. If leaks occur, Contractor shall do all necessary work to correct them and flood testing shall be repeated until no leaks occur.
- B. Water test all existing drains and conductor pipes. Any drains or pipes found to be clogged or pipes found to be leaking, other than those found during the pre-construction testing that were not directed to be repaired, shall be repaired/replaced at the Contractor's expense.
- C. Where the pitch of the roof exceeds 1/2" per foot and thus exceeds the ability to flood test the roof with

multiple location damming technique, the roof surface shall be spray tested for 24 hours with spray racks or other such devices.

3.10 CLEANING

- A. Clean debris from roofs, gutters, downspouts, and drainage systems. Test drainage system for proper operation.

END OF SECTION

LIST OF SUBMITTALS

<u>SUBMITTAL</u>	<u>DATE SUBMITTED</u>	<u>DATE APPROVED</u>
Product Data:	_____	_____
1. Catalog sheets, specifications, installation instructions		
Manufacturer's Intent to Warranty:	_____	_____
Shop Drawings:	_____	_____
1. Intended repair details, Including curbs, penetrations		
Test Reports:	_____	_____
1. Existing drains and pipes		
2. Roof deck fastener pullout		
3. Daily temperature charts		
4. Roof flood test		
Applicator's Certifications:	_____	_____
1. Foreman and worker letter		
2. Foreman and worker letter - Warranted Roof		
Material Certifications:	_____	_____
1. Materials approved with existing system		
Contract Closeout:	_____	_____
1. Contractor's 2 Year Guarantee		
2. Mfr's Certification of existing warranty maintenance		

* * *

SECTION 07900
JOINT SEALERS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide all joint sealer Work as indicated on the Drawings, as required for the completed Work, and as specified herein. This Section includes joint sealants for the following applications:
- 3. Interior joints in the following vertical surfaces and horizontal nontraffic surfaces:
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Vertical joints on exposed surfaces of interior unit masonry concrete walls and partitions.
 - c. Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.
 - d. Control and expansion joints in ceilings and other overhead surfaces.
 - e. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - f. Other joints as indicated.
 - 4. Interior joints in the following horizontal traffic surfaces:
 - a. Control and expansion joints in tile flooring.
 - b. Other joints as indicated.
- B. The work of this section shall not take place until all PCB containing caulk has been removed in accordance with section 02082 and paint (as designated by the Consultant) has been removed in accordance with Section 02085 - Exterior Paint Removal.

1.02 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work

1. American Society for Testing and Materials (ASTM)

1.03 SUBMITTALS

A. Product Data

Catalog sheets, specifications, and installation instructions for each type of joint sealant product specified except miscellaneous materials.

B. Samples for Initial Selection:

1. For general purpose use around windows and at relieving angles, Colors of Exposed Joint Sealants: Match Architect's samples.
2. For all other uses: provide Manufacturer's color charts consisting of strips of cured sealants showing the full range of Manufacturer's standard colors available for each product exposed to view.

C. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2"wide joints formed between two 6" long strips of material matching the appearance of exposed surfaces adjacent to joint sealants

D. Quality Control Submittals

1. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.
2. Installer's Qualifications Data: Affidavit required under Quality Assurance Article.

3. Company Field Advisor Data: Name, business address, and telephone number of Company Field Advisor.
4. Preconstruction Test Results
 - a. Sealant manufacturer's test reports certifying compatibility and adhesion with all contiguous materials.
 - b. Sealant manufacturer's test reports certifying that the sealant will not stain contiguous materials.
 - c. The results of field adhesion testing.

E. Mockups

In accordance with Article titled Quality Assurance.

F. Low Emitting Materials Compliance Submittals

1. Provide documentation for each sealant, sealant primer and cleaner to be used on site and within the weatherproofing/waterproof membrane (interior) of the building, indicating that the sealants and primers meet V.O.C. requirements.

1.04 QUALITY ASSURANCE

A. Installer's Qualifications

The persons installing the sealants and their supervisor shall be personally experienced in the installation of sealants and shall have been regularly employed by a company engaged in the installation of sealants for a minimum of two years.

1. Furnish a letter from the sealant manufacturer, stating that the Installer is authorized to install the manufacturer's sealant materials.

B. Container Labels

Include manufacturer's name, trade name of product, kind of material, federal specification number (if applicable), expiration date (if applicable), and packaging date or batch number.

C. Preconstruction field-adhesion testing

Before installing sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints as directed by Architect.
2. Conduct field adhesion tests for each kind of sealant and joint substrate.
3. Test using ASTM C1193 Method A: For joints with dissimilar substrates, verify adhesion to each substrate separately
4. Do not use sealants that fail to adhere to joint substrates during testing.

D. Mockups

Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle joint sealer materials as recommended by the Manufacturer, to protect from damage.

1.06 PROJECT CONDITIONS**A. Environmental Requirements**

1. Temperature: Unless otherwise approved or recommended in writing by the sealant manufacturer, do not install sealants at temperatures below 40°F or above 85°F.
2. Humidity and Moisture: Do not install the Work of this Section under conditions that are detrimental

to the application, curing, and performance of the materials.

3. Ventilation: Provide sufficient ventilation wherever sealants, primers, and other similar materials are installed in enclosed spaces. Follow manufacturer's recommendations.
4. Do not proceed with installation of joint sealants under the following conditions
 - a. When joint substrates are wet.
 - b. Where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
 - c. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.
 - d. Surfaces are frozen.
 - e. Surfaces are superheated by the sun.

B. Protection

1. Protect all surfaces adjacent to sealants with non-staining removable tape or other approved covering to prevent soiling or staining.
2. Protect all other surfaces in the Work area with tarps, plastic sheets, or other approved covering to prevent defacement from droppings.
3. Protect any painted surfaces which are not included in the Work from impact or damage.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Momentive Performance Materials-GE Silicones, Waterford, NY 12188
- B. Dow Corning Corp., Midland, Michigan 48686

- C. Pecora Corp., Harleyville, PA
- D. Tremco Sealants and waterproofing, Beachwood, OH 44122
- E. Bostik, Middleton, MA 01949
- F. Sika Corporation, Lyndhurst, NJ 07071
- G. Schul International, Pelham, NH 03076**
- H. Emseal Joint Systems Ltd., Westborough, MA 01581**

2.02 SEALANTS

- A. Type 1 Sealant (for use in vertical expansion joints where movement occurs; for general purpose use around windows, door frames, louvers, and other junctures).

- 1. One-part low-medium modulus silicone sealant (plus or minus 50% movement); ASTM C920 classifications type S, grade NS, class 25, uses NT, M, G, and A: General Electric Silpruf SCS2000, Dow Corning 791, Pecora 864NST, Tremco Spectrem 2 or Sika SikaSil WS 295.

Silicones shall meet the following requirements:

- ASTM C719 - Low-Medium Modulus (+ or - 50%). Sealants shall not exhibit any cracking or surface degradation after 5000 hours exposure in the Atlas Twin Arc Weatherometer.
 - ASTM C661 - Shall not incur a durometer increase greater than 10 points.
 - Sealants shall contain zero parts of toxic isocyanurate ingredients.

- B. Type 1A Sealant (for use for pavements, walks, and curbs)

- 1. For Horizontal Joints: Two-part, self-leveling polyurethane sealant for traffic bearing construction; ASTM C920 classifications type M, grade P, class 25, uses T, M, A, and O (granite): Pecora Urexpan NR-200, or , Tremco THC 900/901 or Sika Sikaflex 2C SL.

2. For Vertical Joints: Two-part, non-sag polyurethane sealant; ASTM C920 classifications type M, grade NS, class 25, uses NT, M, A and O (granite): Pecora Dynatrol II, or Bostik Chem-Calk 505, Tremco Dymeric 240FC or Sika Sikaflex 2C NS.

C. Type 1B Sealant (for Plaza Decks)

1. For Horizontal Joints: One-part, self-leveling polyurethane sealant for traffic bearing construction; Pecora UrexpanNR-201, or Sika Sikaflex-1C SL, or Tremco Vulkem 45SSL.
2. For Vertical Joints: One-part, non-sag polyurethane sealant; ASTM C920 classifications type S, grade NS, class 25, uses NT, M, A and O (granite): Pecora Dynatrol I-XL, or Sika Sikaflex 15 LM, Tremco Dymonic.

D. Type 1C Sealant - For general use around windows, store front systems, door frames, metal panel systems, metal coping, louvers, cast stone copings and other junctures where movement occurs.

One-part ultra-low modulus neutral cure silicone sealant; ASTM C920 classifications type S, grade NS, class 25, uses NT, M, G, A and O: Pecora 890 FTS; Tremco Spectrem-1 or Dow Corning 790 or Sika SikaSil WS 290.

E. Type 1D Sealant (use at interior wet areas only-- Bath and Shower areas)

One-part, mildew resistant silicone sealant; ASTM C920 classifications type S, grade NS, class 25, uses NT, M, G and A: Dow Corning 786-M, General Electric Sanitary SCS1700, Pecora 898-NST, Sika Sikasil -N plus or Tremco Tremsil 200 with fungicide.

F. Type 2 sealant (narrow joint seam sealer for joints & cracks 1/4" or less in width)

Silicone sealers: Pecora 1215 seam sealer or Dow Corning 1299

G. Type 3 Sealant (for concealed bedding only).

One-part butyl rubber sealant; Pecora BC-158, Bostik Chem-Calk 300, or Tremco Butyl.

H. Type 4 Sealant (use at high temperature applications, e.g., flues)

One-part silicone sealant for high temperature; ASTM C920 classifications type S, grade NS, class 25, uses NT, M, G, and A: Momentive Performance Materials-GE RTV 106, Dow Corning 736, Tremco Spectrem 1 or Sika Sikasil-GP HT Red

2.03 JOINT FILLERS

- A. Elastomeric Tubing Sealant Backings: (for precast panel joints not compatible with Silicone Sealants): Neoprene, butyl or EPDM tubing complying with ASTM D1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26°F (minus 32°C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.

ASTM D1056, Class SC (oil resistant and medium swell), 2 to 5 psi compression deflection.

- B. Expanded Polyethylene Joint Filler (for existing joints) Flexible, compressible, closed-cell polyethylene of not less than 10 psi compression deflection (25 percent).

- C. Closed-Cell Polyurethane or Closed-Cell Expanded polyethylene Joint Filler (for all cast-in-place concrete work).

Resilient, compressible, semi-rigid; W.R. Meadow Ceramar or equal.

- D. ASTM D1056, Class RE41 (for masonry joints) where shown on the Drawings.

2.04 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
1. For primers used on site and within the weatherproofing/waterproof membrane (interior) of the building comply with V.O.C. requirements specified in Section G01600.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
1. For cleaners used on site and within the weatherproofing/waterproof membrane (interior) of the building comply with V.O.C. requirements specified in Section G01600.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.
- D. Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
1. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin), Type O (open-cell material) or Type B (bicellular material with a surface skin), as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
- E. Bond Breaker Tape

Polyethylene or other plastic tape as recommended by the sealant manufacturer; non-bonding to sealant; self-adhesive where applicable.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine all joint surfaces for conditions that may be detrimental to the performance of the completed Work. Do not proceed until satisfactory corrections have been made.

3.02 PREPARATION

- A. Clean joint surfaces immediately before installation of sealant and other materials specified in this Section.
 - 1. Remove all loose materials, dirt, dust, rust, oils and other foreign matter that will impair the performance of materials installed under this Section.
 - 2. Remove lacquers, protective coatings and similar materials from joint faces with manufacturer's recommended solvents.
 - 3. Thoroughly clean surfaces on which sealant is to be applied using methods such as grinding, acid etching or other approved and manufacturer's recommended means, if required, to clean the joint surfaces, assuring that the sealant materials will obtain positive and permanent adhesion.
 - 4. Prime surfaces, if required, as recommended by Manufacturer before applying sealant.
- B. For Pavements, Walks, and Curbs
 - 1. Set joint fillers at proper depth and position as required for installation of bond breakers, backer rods, and sealants. Do not leave voids or gaps between the ends of joint filler units.
 - a. Smooth Edged Joints: For joints between two concrete slabs or where new concrete abuts

smooth-edged materials, use either cork joint filler or closed cell polyurethane joint filler.

- b. Irregular Edged Joints: For joints where new concrete abuts granite curbs or other irregular edges, use closed cell polyurethane joint filler.
- c. Priming Joint Surfaces:
 - 1) Prime joints which are to receive Type 1A and 1B Sealants.
 - 2) For joints of friable (crumbly, chalky) masonry surfaces and other surfaces which are to receive Type 1 Sealant, prime as recommended by Manufacturer.
 - 3) Prime joints other than those above if so recommended by the manufacturer's printed instructions.
 - 4) Do not allow the primer/sealer to spill or migrate onto adjoining surfaces.

3.03 JOINT BACKING INSTALLATION

- A. Install bond breaker tape in relaxed condition as it comes off the roll. Do not stretch the tape. Lap individual lengths.
- B. Install backer rod of sufficient size to fill the joint width at all points in a compressed state. Compress backer rod at the widest part of the joint by a minimum of 25 percent. Do not cut or puncture the surface skin of the rod.

3.04 SEALANT INSTALLATION

- A. Except as shown or specified otherwise, install sealants in accordance with the manufacturer's printed instructions.
- B. Install sealants with ratchet hand gun or other approved mechanical gun. Where gun application is impracticable, install sealant by knife or by pouring, as applicable.

C. Finishing

Tool all vertical, non-sag sealants so as to compress the sealant, eliminating all air voids and providing a neat smoothly finished joint. Provide slightly concave joint surface, unless otherwise indicated or recommended by the manufacturer.

1. Use tool wetting agents as recommended by the sealant manufacturer.

3.05 **FIELD QUALITY CONTROL**

A. Field Adhesion Testing of Sealants - Test completed elastomeric joints as follows:

1. Extent of Testing: Test completed elastomeric sealant joints as follows:
 - a. Perform 10 tests for the first 1000 feet of joint length for each type of elastomeric sealant and join substrate.
 - b. Perform one test for each 1000 feet of joint length thereafter or one test per each floor per elevation.
2. Test Method - Test joints by hand pull method described below:
 - a. Make knife cuts from one side of the joint to the other, followed by two cuts approximately 2 inches long at sides of joint and meeting cross cut at one end. Place a mark 1 inch from cross-cut end of 2 inch piece.
 - b. Use fingers to grasp 2 inch piece of sealant between cross-cut end and 1" mark, pull firmly at a 90 degree angle or more in direction of side cuts while holding a ruler along sides of sealant. Pull sealant out of joint to the distance recommended by the sealant manufacturer for testing adhesive capability, but not less than that equaling specified maximum movement capability in extension, hold this position for 10 seconds.

- c. For joints with dissimilar substrates, check adhesion to each substrate separately. Do this by extending cut along one side, checking adhesion to opposite side.
- 3. Inspect joints for complete fill, for absence of voids, and for joint configuration complying with specified requirements. Record results in a field-adhesion-test log.
- 4. Inspect tested joints and report on the following:
 - a. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
 - b. Whether sealants filled joint cavities and are free of voids.
 - c. Whether sealant dimensions and configurations comply with specified requirements.
- 5. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
- 6. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
- 7. Evaluation of Field Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements.

Retest failed applications until test results prove sealants comply with indicated requirements.

3.06 CLEANING

- A. Immediately remove misapplied sealant and droppings from metal surfaces with solvents and wiping cloths. On other materials, remove misapplied sealant and droppings by methods and materials recommended in writing by the manufacturer of the sealant material.
- B. After sealants are applied and before skin begins to form on sealant, remove all masking and other protection and clean up remaining defacement caused by the Work.

END OF SECTION

HB:MF:IEH:WM:AS

Notes to Specifier (Delete from Specifications)

- 1. Edit Par 1.01A to suit project requirements.
- 2. Identify on drawings where each type of sealant is used
- 3. Select type, as applicable for project.
- 4. Use Type 1C for windows, doors, louvers, store front systems, metal panel systems, metal coping, etc. where more movement is anticipated.
- 5. Window perimeter sealant color is typically matched to the color of window frame or masonry using custom color sealant. Sealant color at relieving angles may be selected to match mortar color. Delete references to custom colors if standard sealant color will be specified or is acceptable. If manufacturer's standard colors do not match, use sealants that are available in custom colors or specify paint color and coordinate with sealant manufacturer for paint products to be used.

Custom colors are available for sealants provided by DOW, GE, and Pecora only. Delete other manufacturers if custom colors for sealants are required.

6. If custom colors are required, __specify paint color and coordinate with sealant manufacturer for paint products to be used for sealant at relieving angle.
7. **Precompressed sealant is for use as a secondary sealant behind wet sealant. Typical for use at parapets and retaining walls per the standard details.**

* * *

LIST OF SUBMITTALS

<u>SUBMITTAL</u>	<u>DATE SUBMITTED</u>	<u>DATE APPROVED</u>
Product data:	_____	_____
1. Catalog sheets, specifications, installation instructions for each item specified		
Samples:	_____	_____
1. Manufacturer's color charts for Initial Selection		
2. Samples for Verification for each type and color of joint sealant		
3. Color samples for paint for type of sealant/application		
Quality Assurance	_____	_____
1. Manufacturer's Product Certificates		
2. Installer's Qualifications Data		
3. Company Field Advisor Data		
4. Manufacturer's test reports certifying compatibility		
5. Manufacturer's test reports certifying that sealant will not stain		
6. Pre-construction field adhesion test reports		
Mockups:	_____	_____
1. Each location		
Low Emitting Materials:	_____	_____
1. Documentation of VOC content for each sealant, sealant primer and cleaner to be used inside the building to show compliance with Section G01600.		

* * *

SECTION 08110
STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide steel doors and frames as indicated on Drawings and specified herein.
- B. The following Sections contain requirements that relate to this Section:

Thresholds, Weatherstripping and Seals.....Section 08 73 00

1.02 REFERENCES

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

- 1. Underwriters' Laboratories, Inc. (UL)
- 2. American Society for Testing and Materials (ASTM)
- 3. National Fire Protection Association (NFPA)
- 4. Steel Door Institute (SDI)
- 5. Hollow Metal Manufacturers Association (HMMA)
- 6. Intertek.
- 7. National Fenestration Rating Council (NFRC)

1.03 SUBMITTALS

- A. Product Data

Manufacturer's catalog sheets, specifications, and installation instructions.

B. Shop Drawings:

1. Show details of each frame type, elevation and construction for each door type, conditions at openings, location for each door type, location and installation requirements for finish hardware (including cutouts and reinforcements), details of connections, and anchorage and accessory items.
2. Include a schedule of doors and frames using the same reference numbers for details and openings as those on the Contract Drawings.
3. For sound rated assemblies, provide drawings indicating interface of sound rated doors and frames with adjacent construction. Include details of each frame type, cam hinge (when used), sound seals, door bottom, threshold, and door. Indicate location and installation requirements of door and frame hardware and reinforcements. Indicate glazing materials and details for glazed assemblies.

C. Samples

1. Frames: Corner sample of each type, 18" x 18" with mortises and reinforcements, shop primed.
2. Doors: Corner sample of each type showing construction, 18" x 18", with mortises and reinforcements, shop primed.
3. Louver panel.

D. Quality Control Submittals

1. Include approval data and acceptance by an approved testing agency for all fire-rated assemblies.
2. Provide certification glazing meets safety impact requirements of CPSC 16 CFR 1201.
3. Provide certification for oversized assemblies as described in Quality Assurance.
4. Air infiltration rate report: Manufacturer's statement that the opaque door when subjected to air infiltration test in accordance with NFRC 400, the air infiltration did not exceed 0.20 cubic feet per minute per square foot of door.

E. Warranties

Provide manufacturer/installer warranty.

1.04 QUALITY ASSURANCE

A. Provide doors and frames complying with ANSI/SDI A250.8 and as herein specified.

B. Fire Rated Assemblies

Wherever fire resistance classification is shown or scheduled for steel doors and frames, provide fire rated units that have been tested as fire door assemblies and comply with National Fire Protection Association (NFPA) Standard No. 80, are tested in accordance with NFPA 252 or UL 10B/UL 10C and UL 1784 as required by the New York State Building Code and comply with these Specifications. Identify each door and frame with metal UL, or Warnock Hersey labels indicating applicable fire class of the unit. Rivet or weld labels on the hinge edge of door and jamb rabbet of frame.

1. Oversize Assemblies: Whenever fire rated assemblies are larger than size limitations established by NFPA, provide manufacturer's certification that they have been constructed with materials and methods equivalent to requirements for labeled construction.

2. See Door Schedule in the Drawings for Label Requirements (Class) for respective openings.

C. Regulatory Requirements

Notwithstanding the requirements for fire-rated assemblies noted above, all fire-rated doors and frames shall be approved for use in New York City.

Provide evidence of acceptance by an approved testing agency. Provide permanent labels on doors and frames as required by the New York State Building Code. Labels shall be applied at the factory or where fabrication and assembly are performed.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store doors and frames on raised platforms in vertical position with blocking between units to allow air circulation.

- B. During delivery, storage and handling, protect doors and frames from water damage.
- C. Provide delivery, storage and handling in such manner to prevent damage to products.

1.06 FIELD EXAMINATION

- A. At the Site, before door installation, the Fund reserves the right to select at random one or more doors for examination by cutting a portion of such size to reveal the construction of the particular door.
 - 1. If the examination finds that the doors examined do not comply with requirements of the Specifications, all doors shall be removed from the Site and new doors shall be provided. Costs of examination and replacement of rejected doors shall be borne by Contractor.
 - 2. If the examination finds that the doors do comply with the requirements of the Specifications, the cost of the examination and the cost of the replacement of the examined doors will be borne by the Fund.

1.07 GAGE STANDARDS

- A. Gages specified are based on U.S Standard Gauge for hot rolled and cold rolled steel sheets.
- B. The allowable tolerances for steel sheet thicknesses shall be in accordance with HMMA Standards.

1.08 WARRANTY

- A. Submit warranty signed by manufacturer and installer, agreeing to replace assemblies which fail in materials, performance or workmanship within the specified warranty period.
 - 1. Warranty Period: 1 year from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. General Fireproof Door Corp., Bronx, NY 10474
- B. Acme & Dorf Door Corp., Clifton NJ 07011

- C. Ceco Door Products Div., Milan, TN 38358
- D. Curries Company, Mason City, IA 50401
- E. Metalline Fire Door Co., Bronx, NY 10457
- F. Long Island Fireproof Door, Port Washington, NY 11050
- G. Michbi Doors Inc. Brentwood, NY 11717

2.02 **MATERIALS**

A. Hot-Rolled Steel Sheets and Strip

Commercial quality carbon steel, pickled and oiled, complying with ASTM A1011 and ASTM A568.

B. Cold-Rolled Steel Sheets

Commercial Quality carbon steel complying with ASTM A1008 and ASTM A568.

C. Galvannealed Steel Sheets

Carbon steel sheets of commercial quality complying with ASTM A653 Doors and frames shall have A60 zinc-iron coating, mill phosphatized, complying with ASTM A653

D. Anchors and Supports

Fabricate of gages indicated on and of not less than 16 gage sheet steel, unless otherwise indicated, on the drawings

1. Galvanized Units: Galvanized anchors and supports used with galvanized frames, complying with ASTM A153, Class B.

E. Anchorage Devices, Bolts, and other Fasteners

Manufacturer's standard units unless otherwise indicated on the Drawings.

1. Galvanized Units: Galvanized items used with galvanized frames complying with ASTM A153, Class C or D as applicable.

2.03 FABRICATION

- A. Fabricate hollow metal work accurately and assemble neatly to ensure work smooth and free from dents, tool marks, visible waves, warp, buckles and conspicuous joints.
- B. Align lines straight and true with arises and angles as sharp as practicable. Miter corners in true alignment and join similar abutting profiles accurately.
- C. Assemble all joints to form imperceptible intersections when finished.
- D. Form each member, such as jamb and head, from a single piece of metal, unless otherwise shown or approved.
- E. Fasten all members together to provide rigid construction in assembled work. Weld all connections except those for removable members such as glazing beads.
- F. Weld, dress smooth and flush joints on exposed faces.
- G. Clearances

Fabricate doors for their respective frames within the following clearances:

- 1. Jambs and Head: $3/32$ " to $1/8$ ".
 - 2. Meeting Edges of Pairs: $1/8$ " to $3/16$ ".
 - 3. Bottom (no threshold or carpet): $3/8$ ", maximum.
 - 4. Bottom (at threshold or carpet): $1/4$ ", maximum.
- G. Work showing defects or blemishes will be rejected, and rejected work shall be replaced with satisfactory work.

2.04 DOORS

A. General

- 1. Provide steel doors of types and styles indicated on drawings or schedules. Comply with ANSI/SDI A250.8 requirements unless more restrictive requirements are specified herein.
- 2. Design and Thickness: Flush design doors, seamless vertical edges, hollow construction, $1\frac{3}{4}$ " thick unless specifically noted otherwise.

3. Sound Deadening (ASTM E90): Minimum Sound Transmission Class (STC) of 30.
4. Door Edges: Bevel lock stile edge of single acting hinged doors 1/8" in 2". Double acting doors shall have rounded edges, approximately 2 1/4" radius. Meeting stiles of pairs of single acting doors shall be "V" beveled or rounded as detailed on the Drawings or required.
5. Glazing Stops and Beads: Fixed steel stops, formed integral with door unless otherwise approved by the Consultant, on the outside of exterior doors and on the secure side of interior doors. Removable steel beads, of tubular steel of gage indicated on the Drawings or solid bar stock, on the other side of doors secured with machine screws. Form corners with butted hairline joints. Coordinate width of rabbet between fixed stop and removable bead and depth of rabbet with type of glass and glazing required.
6. Astragals: Steel, spot-welded to inactive door for exterior doors, as indicated on the Drawings.
7. Glazing:
 - a. Non-rated doors - 1/4" thick minimum laminated glass meeting safety impact requirements of CPSC 16 CFR 1201.
 - b. Fire-rated doors - Fire Protection rated glazing meeting safety impact requirements of CPSC 16 CFR 1201.
 - c. Fire-protection-rated glazing in excess of 100 square inches shall be permitted in fire door assemblies when tested as components of the door assemblies and not as glass lights per Section BC 715.4.4 the 2014 New York State Building Code.
 - d. Glazing in transom or sidelights of a rated door assembly shall be tested as an assembly in accordance with ASTM E119 or UL 263 per Section BC 715.4.5.

Size and location of vision panels shall be as indicated on the drawings.

B. Interior Doors

1. Fabricate interior doors with 2 outer stretcher-leveled, steel sheets of 16 gage unless indicated otherwise on the Drawings. Construct doors with smooth, flush surfaces without visible joints or seams on exposed faces and stile edges, except around glass and louver panels. On mortise face of door, vertical joints shall be welded, filled and ground smooth.
2. Provide surface sheet reinforcement for surface sheet, edge, hardware, stops and other provisions, of size and gage as detailed on Drawings.
3. Provide 16 GA top and bottom channels and closures as detailed on the Drawings.
4. For Dutch doors, provide metal shelf as detailed on Drawings.
5. For all toilet room, locker room, mechanical room, food service area doors and other doors indicated on the door schedule, all outer sheets of the door shall be galvanized and welds shall be coated with zinc rich primer.

C. Louvered Panels for Doors

1. Provide steel louvers for doors where indicated on Drawings and as specified herein. Cold rolled steel with mitered and welded corners and factory-applied baked enamel primer finish. Spanner head security fasteners, countersunk.
2. Fixed Blade Design - Anemostat Door Products model AFDL or approved equal, modified to have 16 gage frame and 16 gage vision-proof louver blades.
3. Fire Rated Design - Anemostat Door Products model FLDL-UL or approved equal, 16 gage frame and blades, fusible link release mechanism. Comply with requirements of New York State Building Code. The assembly shall be acceptable by a New York City Building Department approved testing agency.

2.05 FRAMES

A. General

1. Provide steel frames for doors, transoms, sidelites, borrowed lites, and other openings where shown, of size and profile as indicated on Drawings.
2. Construction: Full-welded unit construction, with corners mitered and continuously welded full depth and width of frame, unless otherwise indicated. Knock-down type frames will not be accepted.
 - a. Fixed Stops: Integral 5/8" stop unless otherwise indicated. Construct jambs and heads from one piece of metal each; rabbeted and flanged as required for the various types of openings, and neatly mitered or interlocked and welded together. Provide channel, angle and bent plate reinforcing as indicated on approved Shop Drawings or otherwise required. Provide reinforcing in the heads of frames where shown or required.
3. Frame Material
 - a. Interior Frames: 14 gage Galvannealed steel sheet unless indicated otherwise on Drawings.
4. Provide frames for masonry openings with adjustable Underwriter's type masonry anchors to suit conditions of installation, using not less than three (3) at each jamb, in addition to floor anchors.
5. Provide frames with calking stops, filler pieces and trim where indicated on Drawings or required; integrally formed as part of the frame wherever possible. Applied calking stops, filler pieces, and other members as indicated, shall be neatly attached by spot welding. All welds at galvannealed frames shall be painted with zinc-rich primer.
6. Equip sound-proof frames with adjustable door stops and continuous rubber seals. Fill frames solidly with sound-deadening material.
7. At butts, cut back jamb the thickness of one leaf of butt.
8. Drill and tap reinforcement to template.
9. Spot weld 20 gage plaster guard to frame at latch cutouts, if applicable. Paint all welded areas with zinc-rich primer.

10. Provide reinforcement for hardware as indicated on Drawings and as required for proper hardware installation. Refer to Section 08 71 00 - Finish Hardware.
11. Provide frames for other openings as indicated on the Drawings.
12. Provide cutouts and reinforcing for security devices as required.

2.06 SHOP PAINTING

- A. All doors shall be delivered to the site with a full shop coat. Doors not fully shop coated shall not be accepted.
- B. Chemically wash, rinse, and dry exposed and concealed surfaces of fabricated units.
- C. Apply one coat of rust-inhibiting primer (Carboline "Carbozinc 11 HS" or approved equal) to all exposed surfaces of ungalvannealed doors and frames. Use the same paint to touch up all welded areas of galvannealed doors and frames. Apply primer per the manufacturer's recommendations
- D. Units shall pass the following tests:
 1. Salt Spray Test complying with ASTM B117 for 120 continuous hours.
 2. Water fog Test Complying with ASTM D1735 or ASTM D4585 for 240 continuous hours

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions

Examine substrate and conditions, under which the frames are to be installed, for defects which will adversely affect the execution and quality of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Install steel doors, frames, and accessories in accordance with the Drawing Details, approved Shop Drawings, and the

manufacturer's printed instructions, except as otherwise indicated.

B. Frame Installations

Place frames accurately in position; plumb, align, and brace securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreader bars, leaving surfaces smooth and undamaged.

1. At in-place concrete and in-place masonry construction, place frames and secure in place with anchorage devices. Set anchorage devices opposite each anchor location, in accordance with details on approved Shop Drawings and anchorage device manufacturer's instructions. Leave drilled holes rough, not reamed, and free from dust and debris.

a. Anchor frames as detailed on the Drawings.

2. Place fire rated frames in accordance with NFPA Standard No. 80.
3. Provide necessary field splices in frames as detailed on approved Shop Drawings, welded and finished to match factory fabrication.
4. Extend jambs to structural floor slab and securely anchor in place.

C. Door Installation

1. Install doors accurately in their respective frames within the clearance specified in Part 2.
2. Place fire rated doors with clearances as specified in NFPA standard No. 80.

- D. Drill and tap doors and frames to receive surface applied hardware.

3.03 ADJUSTING

A. Prime Coat Touch-up

Immediately after installation, sand smooth and clean rusted and damaged areas of shop prime coat and apply touch-up of original primer.

B. Commissioning

Commissioning of all doors by the installer supervised by an Architectural Hardware Consultant who is thoroughly knowledgeable of the various components and systems is required.

1. Testing of opening force, closing device, complete closure of the door within clearance tolerances, and full engagement of latch(es) where required by door type. Verify cleanliness of labels, fusible links and other components that cannot be painted.
2. Functional testing of automatic-closing or power-operated fire door assemblies and electrically controlled latching hardware or release devices must be coordinated with the other electrically controlled system specified by the Consultant.
3. After all doors have been commissioned and prior their acceptance, the Consultant, in consultation with the Campus and Fund, will select doors (at least one for each operational type) whose full range operation must be demonstrated by the Contractor to the satisfaction of the Consultant.

C. Final Adjustments

Check and adjust operating finish hardware items prior to final inspection. Leave work in complete and proper operating condition.

3.04 CLEANING

- A. Clean doors, frames, and accessories, leaving free of dirt and other foreign material after completion of installation.

END OF SECTION

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SECTION 08 71 00
DOOR FINISH HARDWARE

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Work of this Section, as shown or specified, shall be in accordance with the Contract Documents.

1.02 WORK INCLUDED

A. Work of this Section includes all labor, materials, equipment and services necessary to furnish all the door finish hardware as shown on and listed on the Drawings and specified herein. Installations shall be completed under the general contract by qualified skilled mechanics experienced with Door Finish Hardware installation and service.

1.03 RELATED SECTIONS

A. Section 08 11 13 - "Hollow Metal Doors"

1.04 QUALITY ASSURANCE

A. Hardware shall be suitable and adapted to its required use and shall fit its designated location. Should any hardware as shown, specified or required fail to meet the intended requirements or require modification to suit or fit the designated location, determine the correction or modification necessary and notify the College in ample time to avoid delay in the manufacture and delivery of the hardware.

B. For fire rated openings provide hardware complying with NFPA Standard No. 80 requirements of authorities having jurisdiction.

C. Barrier Free Requirements: Maximum pressure applied to the latch area to open exterior doors shall not exceed five (5) pounds. Interior doors which have a self-closing feature shall require pressure not to exceed five (5) pounds.

D. Hardware Supplier Qualifications: The hardware supplier shall have been regularly engaged in the sale and distribution of finish hardware for projects of comparable scope and size for a minimum of five (5) years. The hardware supplier shall have an AHC of the Door and Hardware Institute on staff who will be responsible for overseeing the scheduling, detailing, ordering

and coordination of finish hardware, and shall be available for consultation with the College, at no additional cost to the College, during progress of construction. The hardware supplier shall be a direct factory authorized distributor for all finish hardware items being furnished in accordance with this Specification.

1.05 SUBMITTALS

- A. Before any finish hardware is ordered or purchased, contractor shall submit catalog cuts on all hardware and a complete Hardware Schedule of Finish Hardware.
 - 1. Each item listed in the Hardware Schedule shall be identifiable with respect to manufacture, brand, catalog number, material and finish, and specific door where item will be installed, no exceptions.
 - 2. Incomplete shop drawings will be returned and not reviewed until complete, no exceptions; and it is the contractor's sole responsibility to submit required shop drawings in time and without delay to the work.
- B. Where submission differs from Schedule given herein, use different color or other means of identification to bring change to the attention of the College.
- C. Hardware: Supplier shall provide all product information, wiring diagrams and electrical data to the electrical contractor.
 - 1. Samples: Submit samples as requested by College. Do not proceed with installation until samples have been approved. Approved samples may be installed in the Work.

1.06 PRODUCT HANDLING

- A. Pack finish hardware in approved manufacturer's containers, complete with trimmings, bolts, screws, washers, etc. as required for application and securement. Each container shall bear a suitable label which shall state the quantity and kind of contents of said container, as well as identifying marks relating to the approved Hardware Schedule and it's location in the Project.
- B. Knobs, handles, pulls and other items of finish hardware with easily damaged finishes shall be individually wrapped before placing in containers and with sufficient sheet cloth or cotton backed paper which shall be adequately tied with heavy strings, all as necessary to protect the finishes.

C. Finish hardware shall be delivered, as directed, to the building site or the factories of the various fabricators of metal Work to which such hardware is to be applied. Deliver hardware in the order required and in ample time to permit application at the building, or fabricators' shops, within the time required for the completion of the building.

1.07 JOB CONDITIONS

- A. Field Service: The hardware supplier shall assign a competent representative, acceptable to the College, to be at the jobsite each time a major shipment of finish hardware is received. Such representative shall assist in "checking in" these shipments and shall secure a receipt covering the contents of each shipment. In addition, such representative shall be available for immediate call to the jobsite when, in the opinion of the College his presence is necessary.
- B. Templates: Promptly following approval of the Hardware Schedule by the College, furnish and deliver template information to the fabricators of items to which finish hardware is to be applied.
1. Such deliveries shall be made in ample time to avoid delays in such Work of said fabricators. Provide Drawings, schedules and detailed information to other trades as necessary for them to accommodate and prepare their Work to receive the finish hardware.
- C. Cooperation and Coordination:
1. Cooperate and coordinate Work with that of other trades supplying materials or performing Work in contact with, connecting to, underlying or overlaying the Work of this Section.
 2. Provide complete data of requirements for Work of this Section to those other trades whose Work is affected by or dependent upon the Work of this Section.
 3. Furnish all items to be built into other Work in ample time to avoid delaying the progress of such Work.
- D. Existing Conditions: Hardware supplier shall verify all existing conditions in the field to ensure compatibility with hardware specified in the hardware sets herein. Any discrepancies between the existing field conditions and hardware specified shall be brought to the attention of the College immediately. Hardware supplier shall not order any hardware until all discrepancies are rectified and written approval is granted by the College.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Requirements for design, grade, function, finish, size and other distinctive qualities of each type of finish hardware are indicated herein. Products are identified by using hardware appropriate hardware designation numbers.
- B. Manufacturer's are listed for each hardware type required. Provide either the product designated, or approved equal.
- C. Proprietary Products: References to specific proprietary products are used to establish minimum standards of utility and quality. Other materials may be considered by the College in accordance with the provisions of these Specifications; except where noted "NS" (No Substitutions) due to campus requirement for maintenance standard.
- D. Notwithstanding anything to the contrary in this Specification or the Drawings, the finish hardware shall conform to the requirements of governmental authorities having jurisdiction and such requirements shall be followed as if specifically set forth in this Specification.
- E. Finish hardware shall be uniform in color and finish and free from imperfections affecting it's appearance, function, operation and serviceability. Such hardware shall be suited and adapted to it's required use and shall fit it's respective location.
- F. Where the finished shape or size of members receiving finish hardware are such as to prevent or render unsuitable the use of the specific types or sizes of such hardware, suitable types of sizes shall be furnished, having as nearly as practicable the same function, operation and quality as the specified hardware.
- G. Bolts, screws and other fastenings required for the application of the finished hardware shall be of size and type to fit requirements and shall be of the same material and finish as the exposed parts of such hardware which they adjoin. Exposed screws and bolts shall have countersunk oval heads and bolts shall be provided with cap nuts. Countersunk part of screw and bolt holes shall be finished smoothly without sharp edges and form a firm seal for such screw and bolt head.
- H. All items of Finish Hardware to be wholly manufactured in the United States of America to insure all parts can be obtained or replaced when needed.

2.02 PRODUCTS AND MANUFACTURERS

A. The following are acceptable manufacturers, unless specifically indicated in the hardware sets. Underlined manufacturers are those whose products are indicated in the hardware sets. No substitutions will be considered after the award of the Contract.

- | | |
|--------------------------|--|
| 1. Continuous Hinges: | Hager, Marker or Equal Quality. |
| 2. Locksets & Latchsets: | Stanley/BEST |
| 3. Closers: | Hager 5100 series Heavy Duty Closer |
| 4. Weatherstripping: | Zero, Pemko, National Guard or Equal Quality |

2.03 SPECIFIC PRODUCTS

B. Hinges:

1. Continuous Hinges: Unless otherwise specified in the hardware sets, continuous hinges shall be provided at all entrance doors, and shall be full height gear type, providing full height door support. Provide heavy duty hinges capable of supporting doors weighing up to five-hundred (500) pounds, and fabricated of extruded aluminum 6063-T5 alloy. Provide hinges with 304 stainless steel bearings with eight (8) percent carbon content for lubricity. Hinges shall be heavy non-handed, with symmetrical templated hole pattern, with twenty-one (21) fasteners on the door side and twenty-one (21) fasteners on the frame side. Hinges shall exceed ASTM Standard 156.1 cycle test for 1,500,000 repetitions. Provide hinges with manufacturer's ten (10) year warranty.

B. Surface Closers:

1. Unless otherwise indicated, closers shall not be visible on the public side of doors. Closers opening into public spaces shall be provided with parallel arms and brackets to suit.
 - a. All closers shall be non-handed, unless specified otherwise.
 - b. Closers shall be sized in accordance with the accepted manufacturer's standards to suit height, width, weight of door and draft conditions.
 - c. All rated doors must - as per code requirement - have automatic closers so that rating is maintained.

C. Locking and Latching Devices:

1. Mechanical: Provide cylindrical locks in the functions and types, as specified. Provide cast lever sets with all locking devices. Coordinate with College keying requirements.

D. Keys and Keying:

1. Supplier shall meet with the College Locksmith to finalize

- keying requirements and obtain final instructions in writing.
2. Keying to be coordinated with Campus Locksmith. Final cores to be delivered to Locksmith with key blanks; provide uncombined cores on projects with 30 doors or less.
 2. Review the keying system with the College and provide as directed. Key pinning charts, if required for expansion of an existing system, shall be provided by the College.
 3. Provide interchangeable core to comply with College's request.
 - a. Provide three (3) keys for each lock, five (5) master keys and five (5) grand master keys.
 - b. Provide visual key control stamping and permanently mark keys "do not duplicate".
 - c. Provide keys manufactured of nickel silver only.
 - d. Furnish one (1) extra key for each lock.
 4. Provide all cylinders as Construction Master Keyed.
 5. Provide key control system, including key cabinet by Lund Equipment Company, with capacity to store one-hundred-fifty (150) percent of keys furnished.
 6. At Project end deliver all keys to the College's representative.

2.04 FINISHES

- A. Provide finish hardware with the following finishes unless otherwise shown: US 26D.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General: Make periodic checks during construction in order to ascertain that the finish hardware furnished has been installed correctly. After completion of all construction Work, adjust finish hardware to work properly. Test all hardware and keying and adjust as required for smooth, free operation.
- B. Install all Finish Hardware in strict accord with hardware manufacturer's instructions and recommendations.
- C. Contractor shall not leave any door unsecured overnight, and any newly installed doors must be installed complete with lockset, glazing panels(s), thresholds, and all fasteners in quantities recommended by the specific door manufacturer, no exceptions.
- D. Contractor shall coordinate with the College at least two days in advance the transfer date for the lockset core(s) to insure that the College Lockshop will be available for the time and date when Contractor requests the relocation of any core(s).

3.02 HARDWARE SETS

HARDWARE SET #1**New Single Machine/Mechanical Room Door**

<u>ITEM</u>	<u>QUANTITY</u>	<u>MFR & CAT. NO.</u>
1. Hinges	1	Continuous, Heavy Duty by Hager, Marker or Select Only
2. Locks & Latchsets	1	Stanley/Best cores, 7-pin 1E7J4 lock cylinder, removable - NO SUBSTITUTIONS . Lever set equal to Best series 9K lever, 93K backset, 14K trim, USD26 finish. MUST ACCEPT BEST CYLINDER
3. Surface Mounted Door Closer	1	Hager 5100 Series Heavy Duty Closer

1. Contractor to provide shop drawings of all components.
2. Contractor to have meeting with College to review installations prior to any physical installation work.

END OF SECTION 08 71 00

SECTION 09260
GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL**1.01 DESCRIPTION OF WORK**

- A. Provide all materials, labor and equipment to properly install the following Work:
1. Gypsum wallboard.
 2. Abuse and impact resistant gypsum board.
 3. Gypsum board ceilings and soffits.
 4. Tile backer board.
 5. Non-load-bearing steel framing.
 6. Insulation
 7. All accessory components.
 8. All repairs to existing GWB where modified by the work.

1.02 REFERENCES

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
- B. American Society for Testing and Materials (ASTM), latest editions.
- A641 Zinc-Coated (Galvanized) Carbon Steel Wire.
- A653/ General Requirements for Steel Sheet, Zinc A653M Coated (Galvanized) by the Hot-Dip Process
- C11 Standard Terminology Related to Gypsum and Related Building Materials and Systems
- C473 Standard Test Methods for Physical Testing of Gypsum Panel Products
- C475 Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board

- C645 Standard Specification for Nonstructural Steel Framing Members
- C665 Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
- C754 Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products
- C834 Standard Specification for Latex Sealants
- C840 Specification for Application and Finishing of Gypsum Board
- C919 Standard Practice for Use of Sealants in Acoustical Applications
- C1002 Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood studs or Steel Studs
- C1047 Standard Specification for accessories for Gypsum Wallboard and Gypsum Veneer Base
- C1278 Standard Specification for Fiber-Reinforced Gypsum Panel
- C1325 Standard Specification for Non-Asbestos Fiber Mat Reinforced Cementitious Backer Units
- C1388 Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings
- C1396 Standard Specification for Gypsum Board
- D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
- E84 Surface Burning Characteristics of Building Materials
- E119 Fire Tests of Building Construction and Materials
- G21 Standard Practice for determining Resistance of Synthetic Polymeric Materials to Fungi

C. Gypsum Association

- GA-600 Fire Resistance Design Manual

GA-214 Levels of Finishes

GA-216 Recommended Specifications for the Application and Finishing of Gypsum Board

GA-505 Gypsum Board Products - Glossary of Terminology

D. Underwriters Laboratories Inc. (UL)

Fire Resistance Directory

E. Tile Council of America

Handbook for Ceramic Tile Installation

F. International Code Council, ICC-ES (Evaluation Service)

AC86 - Acceptance Criteria for Cold-Formed Steel Framing Members - Interior Non load-bearing Wall Assemblies.

G. American Iron and Steel Institute (AISI)

AISI S905 - Test Methods for Mechanically Fastened Cold-Formed Steel Connections

AISI Standard for Cold-Formed Steel Framing - General Provisions

AISI NASPEC

1.03 **SUBMITTALS**

A. Product Data

Submit manufacturers' product information, specifications, and installation instructions for the following products: mold and moisture resistant gypsum board, abuse and impact resistant gypsum board, tile backer board, joint compounds, acoustical sealants, insulation, deck flute closures, fasteners, trim, control joints, joint reinforcing, metal furring members, metal studs, tracks, runners, resilient clips, steel grounds, and all related accessories.

Submit limiting height tables for metal stud framing based on testing and engineering analysis in accordance with ICC-ES Acceptance Criteria AC86.

B. Shop Drawings

Submit drawings indicating sizes and locations of steel grounds for attachment and support of signs, other accessories, fixtures, furnishings, finishes, and equipment.

C. Samples

Submit samples of the following materials:

1. Wallboard, each type: 12" square.
2. Metal studs and track: 12"
3. Accessories: 12", outside corner bead.
4. Deck flute closures: 2
5. Screw, each type: 2

D. Materials Certificates and Acceptances

1. Submit certificates from the manufacturers of the specified materials stating compliance with the applicable requirements set forth for all materials specified in this Section.
2. Submit certification indicating that the materials and assemblies as regulated by the New York State Building Code are acceptable for the intended use. When test methods are stipulated in the New York State Building Code, the tests utilized shall be stated in the certification. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.
3. Submit written acceptances from the wallboard manufacturer and metal stud manufacturer accepting the type of metal studs, tracks, and fasteners to be used for each type of wallboard.

E. Low Emitting Materials Compliance Submittals.

1. Provide documentation for each sealant to be used indicating that the sealants comply with V.O.C. requirements as stated as stated below:
 - A. The following list of adhesive and sealant V.O.C limits is for the Contractor's use in selecting adhesives and sealants if specified products are not available or if the Contractor is proposing alternate adhesives and sealants.

B. For interior applications (for anything within the building's weatherproofing system), use adhesives and sealants that comply with New York State V.O.C. requirements or the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA method 24), whichever is more stringent:

1. Wood Glues: 30 g/L.
2. Metal to Metal Adhesives: 30 g/L.
3. Adhesives for Porous Materials (Except Wood): 50 g/L.
4. Subfloor Adhesives: 50 g/L.
5. Plastic Foam Adhesives: 50 g/L.
6. Carpet Adhesives: 50 g/L.
7. Carpet Pad Adhesives: 50 g/L.
8. VCT and Asphalt Tile Adhesives: 50 g/L.
9. Cove Base Adhesives: 50 g/L.
10. Gypsum Board and Panel Adhesives: 50 g/L.
11. Rubber Floor Adhesives: 60 g/L.
12. Ceramic Tile Adhesives: 65 g/L.
13. Multipurpose Construction Adhesives: 70 g/L.
14. Fiberglass Adhesives: 80 g/L.
15. Structural Glazing Adhesives: 100 g/L.
16. Top and Trim Adhesives: 250 g/l.
17. Structural Wood Member Adhesive: 140 g/l.
18. Wood Flooring Adhesive: 100 g/L.
19. Contact Adhesive: 80 g/L.
20. Special Purpose Contact Adhesive: 250 g/l.
21. Plastic Cement Welding Compounds: 250 g/L.
22. ABS Welding Compounds: 325 g/L.
23. CPVC Welding Compounds: 490 g/L.
24. PVC Welding Compounds: 510 g/L.
25. Adhesive Primer for Plastic: 550 g/L.
26. Architectural Sealants: 250 g/L less water.
27. Non-Membrane Roof Sealants: 300 g/l less water.
28. Single Ply Roof Membrane Sealants: 450 g/l less water.
29. All other Sealants: 420 g/l less water.
30. Sealant Primers for Nonporous Substrates: 250 g/L less water.

31. Sealant Primers for Porous Substrates:
775 g/L less water.

1.04 QUALITY ASSURANCE

A. Qualifications

Submit affidavit certifying that installer is a firm with not less than 5 years of experience relevant to the installation of specified materials.

B. Regulatory Requirements

1. Building Code: Work of this section shall conform to all requirements of New York State Building Code.

2. Fire-Resistance Ratings

Comply with fire-resistance ratings as indicated and as required by governing authorities and codes. Provide certification and listing by an Approved Agency in accordance with NYC Dept. of Buildings rules, indicating that the materials and assemblies as regulated by the New York State Building Code are acceptable for the intended use.

Provide materials, accessories and application procedures which have been listed by UL or tested in accordance with ASTM E119 for the type of construction shown. Provide materials and construct assemblies which qualify for required fire resistance classifications in accordance with the Gypsum Association "Fire Resistance Design Manual" as referenced in the Building Code of the State of New York.

C. Industry Standards

1. Comply with applicable requirements of ASTM C840, except where more detailed or more stringent requirements are indicated, including the recommendations of the manufacturer.
2. Acoustical Ratings: Comply with acoustical ratings as required and based on type of construction indicated on the Drawings. Provide materials, accessories, including fasteners, seals, sealants and application procedures which have been listed by manufacturer or tested in accordance with ASTM E90 for the type of construction shown.

D. Company Field Advisor

Secure the services of a Company Field Advisor of the gypsum board manufacturer for a minimum of 2 working hours. The Field Advisor shall be certified in writing by the manufacturer to be technically qualified in design, installation, and servicing of the required products. The Field Advisor shall be present at the beginning of the actual gypsum board installation for the purpose of:

1. Rendering technical assistance to the Contractor regarding installation procedures of the system.
2. Familiarizing the Campus' Representative with all aspects of the system including inspection techniques.
3. Answering all questions which might arise.

E. Single Source Responsibility

Obtain all steel studs and other metal framing components and accessories from a single manufacturer.

F. Field Samples

The first completed gypsum board installations of each type shall serve as field samples for inspection of installation and finishing work by the Architect. These installations, when approved by the Architect, will become the benchmark for workmanship for the rest of the installation. The Contractor shall notify the Architect when such field samples are ready for review.

1.06 PROGRESS INSPECTIONS

- A. The Fund will retain a Special Inspector to perform progress inspections for all gypsum board assemblies in accordance with 2015 New York State Building Code for fire resistance rated partitions, floors, ceilings, and shafts.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer.
- B. Store all materials inside, under cover, in a manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes. Neatly stack gypsum

boards to prevent sagging. Do not store at temperature exceeding 125°F.

- C. Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal framing members, corner beads, and trim from being bent or damaged.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with requirements, provide products of a specified manufacturer.

Products which vary slightly from specified criteria will be considered for acceptance upon submission of a written explanation and complete technical data to the Consultant. Written authorization from the Consultant is required prior to installation of such materials whether or not the manufacturers are listed herein.

A. Gypsum board and related products

Gypsum board shall be mold and moisture resistant.

1. SHEETROCK brand Mold Tough Gypsum Panels, USG Corporation
2. SHEETROCK brand Mold Tough Gypsum Liner Panels, USG Corporation
3. DensArmor Plus Interior Guard Panels, Georgia-Pacific Gypsum Corporation, Atlanta, GA
4. DensGlass Ultra Shaft Liner Panels, Georgia-Pacific Gypsum Corporation, Atlanta, GA
5. Gold Bond brand XP Fire-Shield Wallboard, National Gypsum Company, Charlotte, NC
6. Gold Bond brand 1" Fire-Shield Shaftliner XP Gypsum Panels, National Gypsum Company, Charlotte, NC
7. Mold Defense Type X panels, Continental Building Products LLC.
8. Mold Defense Shaftliner Type X panels, Continental Building Products LLC.
9. Weather Defense Platinum Shaftliner Type X, Continental Building Products LLC.

10. CertainTeed M2 Tech moisture and mold resistant regular and type X gypsum board

11. CertainTeed M2 Tech moisture and mold resistant type X Shaft Liner

12. CertainTeed GlasRoc type X Shaft Liner

B. Abuse and impact resistant gypsum board and related products

Manufacturers of products proposed as equal to specified products must demonstrate equivalent abuse and impact resistance in testing subject to the Consultant's approval, including erection of sample comparison panels, at no cost to the Fund.

1. SHEETROCK brand Mold Tough VHI (Very High Impact) FIRECODE Core Gypsum Panels, USG Corporation

2. Fire-Shield Hi-Impact brand XP Wallboard Panels - National Gypsum Company

3. Protecta HIR 300 Type X With Mold Defense panels, Continental Building Products LLC.

4. CertainTeed AirRenew Extreme Impact, impact resistant Gypsum Board

C. Tile backer board and related products

1. DUROCK Brand Cement Board Next Gen - USG Corp., Chicago, IL

2. PermaBase Brand Cement Board - National Gypsum Co., Charlotte, NC

D. Metal Support Materials

1. Marino/Ware, South Plainfield, NJ

2. ClarkDietrich Building Systems, West Chester, OH

3. Super Stud Building Products Inc., Edison, NJ

4. United States Gypsum Co., Chicago, IL

E. Insulation - Sound Attenuating Blankets

1. Thermafiber Sound Attenuation Fire Blankets
- Thermafiber Inc., Wabash, IN
2. Roxul Acoustical Fire Batts - Roxul Inc.,
Milton, Ontario

2.02 MATERIALS

A. Metal Framing

1. Steel Studs

In compliance with ASTM C645, provide galvanized steel, C-shaped members as specified and as shown on the Drawings of sizes indicated below:

- a. Stud depth: $3\frac{5}{8}$ " unless indicated otherwise on the Drawings.
- b. Stud thickness: 0.0296" minimum thickness of base metal or 20 gage min., for all wall framing members unless otherwise indicated.

1) Alternative thickness studs:

- a) Alternative thickness studs may be used in lieu of 0.0296" thick studs, and shall be 20 gage equivalent or heavier gage, evaluated in accordance with ICC-ES AC86 Acceptance Criteria, latest edition, with partition heights limited by the following:

- i) Deflection: L/240. L/360 for partitions with ceramic tile finish.

- ii) Loads: All loads to which the assembly is subjected including wall mounted equipment and furnishings. Not less than 5 psf uniform transverse load. Framing shall support all loads without exceeding the allowable stress of the steel.

- iii) Brand and type of wallboard used, and number of layers, extending full height of partition.

- b) Pull-out strength for #6 screws in 20 gage equivalent studs shall be at least

45 lbs. in accordance with AISI S905 test method.

- c) Use of alternative thickness studs is subject to the written acceptance of the wallboard manufacturer.
 - d) Conform to all requirements indicated on the Drawings and specified herein, including fire resistance ratings of assemblies.
- c. Stud thickness: 0.0428" min. thickness of base metal or 18 gage min., unless otherwise indicated, for use at all framed openings, with double studs at each door jamb and as wall framing members in areas where cementitious tile backer board is indicated.
- d. Stud thickness: 0.0677" min. thickness of base metal or 14 gage min., unless otherwise indicated, for use behind wall hung toilet partitions, and at interior window guards.

2. Runners

In compliance with ASTM C645, provide galvanized steel runners to match applicable assembly specified, to match wall framing members, unless indicated otherwise.

3. Furring Members

In compliance with ASTM C645, provide galvanized cold rolled steel, 0.0296" minimum thickness of base metal or 20 gage min., screw type hat shaped channels; 7/8" depth, width approx. 2¾", hemmed edges.

- a. Where furring channels are used in conjunction with resilient sound isolation clips, width of channel shall be coordinated with clip configuration to ensure proper fit.

4. Furring Members for Shaft Walls

Provide galvanized steel C-H studs, J-Runners or other stud shapes indicated on Drawings, 0.0346" minimum design steel thickness or 20 gage minimum.

5. Steel Grounds

Provide galvanized steel grounds 20 gage minimum thickness, minimum 8" wide by minimum 24" long, for installation directly to steel studs to provide support for wall mounted equipment, fixtures, furnishings, accessories, panels, and all other items of work to be attached to walls. Provide grounds for each room name sign and other signs indicated to be located on drywall partitions. Provide grounds of greater size and thickness as required for secure installation of grab bars and other weight bearing items, and heavy items. Comply with manufacturers' recommendations. Refer to Section 10840 for requirements for grab bar anchor plates (grounds).

- a. Where steel grounds are attached to channels that are mounted to resilient clip, the size of the ground shall be extended to span a minimum of 3 furring channels.

6. Horizontal Bracing

Provide 3/4" galvanized cold rolled steel channels, or steel studs, fastened to webs in a horizontal position. Angle or channel shaped galvanized horizontal bracing that is fixed in place without fasteners may be used subject to written acceptance of the steel stud manufacturer and meeting all required partition ratings and performance criteria; 0.0296" minimum base metal thickness, 7/8" x 7/8" minimum size angle or equivalent channel shape. Comply with ASTM C645, ASTM C754.

7. Protective coating of framing shall conform to ASTM A653/A653M - G40 minimum, or shall be a protective coating with equal or better corrosion resistance.

8. Fasteners for Metal Framing

Provide fasteners of type, size, style, grade, holding power, class, and other properties required for secure installation of framing and furring. Galvanize all fasteners and accessories. Powder actuated fasteners shall not be used during official school hours and shall not be used in occupied areas of a building.

All devices, other than bolts, used to interconnect ceiling members are required to be certified and listed by an Approved Agency in accordance with NYC Department of Buildings rules.

Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.

B. Gypsum Board

1. General: Panels shall be mold and moisture resistant, meeting a minimum average panel score of "10" in accordance with ASTM D3273. Provide in dimensions resulting in the minimum number of joints. Long edges tapered. Panels shall not contain asbestos.

2. Paper faced gypsum board

a. Gypsum wallboard: 5/8" thick, Firecode Core (Type X). Comply with ASTM C1396.

b. Shaft wall liner panel: 1" thick, fire resistance type X. Comply with ASTM C1396.

c. Gypsum board shall be manufactured with a minimum of 90% pre-consumer content materials.

d. Fungi Resistance: Paper facing shall be fungi resistant when tested in accordance with ASTM D3273.

3. Glass mat faced gypsum board (glass mat facings front and back)

a. Gypsum wallboard: 5/8" thick, Type X Core. Comply with ASTM C1396 and ASTM C1177.

b. Shaft wall liner panel: 1" thick, fire resistance Type X. Comply with ASTM C1396.

c. Gypsum board shall be manufactured with a minimum of 90% pre-consumer content materials.

d. Fungi Resistance: Facing shall be fungi resistant when tested in accordance with ASTM G21-02 or D3273.

C. Abuse and Impact Resistant Gypsum Board

1. General: Provide reinforced abuse and impact resistant gypsum board, consisting of gypsum, or gypsum and cellulose fiber, with fiberglass mesh reinforcement. Weight of 5/8" thick panel approximately 2.8 psf. Surfaces shall be true, free from imperfections, and suitable for use with or without decoration. Provide in 48" widths and in such

lengths as will result in the minimum number of joints. Provide 5/8" thick panels generally, unless indicated otherwise on the Drawings. Panels shall not contain asbestos. Panels shall be mold resistant, meeting a minimum average panel score of "10" in accordance with ASTM D3273.

2. Reinforcement: Fiberglass mesh embedded in the back of full panel.
3. Meet or exceed criteria when tested in accordance with ASTM C473, or ASTM C1396:

Thickness of panel: 5/8"

- | | | |
|----|---|----------|
| a. | Flexural Strength,
both directions (lbf) | 195 |
| b. | Humidified Deflection
(eighths of inch) | 2 |
| c. | Core, End and Edge
Hardness (lbf) | 40 |
| d. | Nail Pull Resistance
(lbf) | 210 |
| e. | Fire Resistance,
Type X | 1-2 Hrs. |
| f. | Flame Spread (face), max. | 15 |
| g. | Smoke Developed, max. | 5 |

4. Abuse and impact resistant gypsum board shall be manufactured with a minimum of 6% of pre-consumer content materials.

D. Tile Backer Board for Wet Locations

1. General: 5/8" thick. Comply with ANSI A118.9. Fire resistance testing in accordance with ASTM E119. Noncombustible ASTM E136. Composed of Portland cement, aggregate and fiberglass mesh reinforcement. Provide in dimensions resulting in the minimum number of joints. Panels shall not contain asbestos. Provide this type of panel where ceramic tile finish is indicated at wet locations such as shower rooms, locker rooms, kitchen and server areas, multi-occupant toilet rooms. Panels shall be mold resistant, meeting a minimum average panel score of "10" in accordance with ASTM D3273.

2. Meet or exceed the following criteria:
 - a. Flexural strength: Min. 750 lb./in² in accordance with ASTM Test reference C947.
 - b. Water absorption: Max. 15% by weight in 24 hrs. in accordance with ASTM C473.
 - c. Indentation strength: 1250 psi min. in accordance with ASTM D2394.
 - d. Nail Pull Resistance: 90 lb. min. in accordance with ASTM C473 or D1037.
 - e. Surface Burning Characteristics: Flame spread-5, Smoke Density-0, in accordance with ASTM E84.
3. Tile backer board shall be manufactured with a minimum of 10% of pre-consumer content materials.

E. Furring Anchorages

1. In compliance with ASTM A641, provide 16 gage galvanized wire ties, manufacturers standard wire-type clips, bolts, or screws as recommended by furring manufacturer.
2. All devices, other than bolts, used to interconnect ceiling members are required to be certified and listed by an Approved Agency in accordance with NYC Department of Buildings rules. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.

F. Trim Accessories

1. General: Comply with ASTM C1047, standard accessories as recommended by gypsum board manufacturer. Where exposed to view, provide accessories recommended for level-5 finish. Metal trim shall be formed of galvanized or zinc-coated steel. Provide paper faced metal trim where recommended by board manufacturer, designed for concealment of paper or metal flanges in joint compound. Provide corner beads, L-type edge trim beads, V-type edge trim beads, and control joint beads.
2. Corner Reinforcement, provide for all outside corners:

a. Sheetrock Brand paper faced metal outside corner, tape-on bead, model B1W; U.S. Gypsum Company.

1) Where covered by thinset ceramic tile provide model B1W-NB.

b. No-Coat UltraCorner Brand Structural Drywall Corner.

G. Joint Treatment Materials

1. Jointing System - typical: Comply with ASTM C475. Type recommended by the manufacturer for the application indicated, to prevent cracking, and to meet fire resistance requirements where applicable. Reinforcing tape and compound shall be designed as a system to be used together.
2. Provide setting type or ready-mixed drying type joint compound as recommended by the board manufacturer for each type of board, for joints, fastener heads and cut edges of board.
3. Skim coat: For final coat of Level 5 finish, use type recommended by manufacturer.
4. Jointing compound shall be asbestos free.
5. For tile backer board provide tile backer board manufacturer's recommended fillers, tapes and other materials.

H. Insulation: Comply with ASTM C665, Mineral Fiber Blanket.

1. Sound attenuating blankets, Type I, Density: 2.5 lbs/cubic foot minimum. Thermafiber Inc., Wabash, IN, 888-834-2371; Roxul Inc., Milton, Ontario 800-265-6878.
2. Foil backed insulating blankets, Type III, Class A, by Thermafiber, Inc. Density: 3 lbs/cubic foot minimum. R-value: 3.7 min. per inch of thickness. Foil backing shall be omitted from blankets in exterior partitions indicated to have other vapor retarding materials as part of the wall assembly, such as vapor retarding air barrier systems, or tile backer board assemblies with polyethylene membrane.
3. Blanket and batt insulation units shall be manufactured with a minimum of 20% of pre-consumer content materials.

4. Fungi Resistance: Insulation and facing shall be fungi resistant when tested in accordance with ASTM C1338.

I. Miscellaneous Materials

1. General: Provide auxiliary materials for gypsum board work of the type and grade recommended by the gypsum board manufacturer.
2. Gypsum board Screws:
 - a. Comply with recommendations of the wallboard and metal framing manufacturers and ASTM C1002.
 - b. For fastening the gypsum board in place, specially designed for use with power-driven tools, of length recommended for application in board manufacturers printed instructions, but not less than 1¼" long, with self-tapping threads and self-drilling points. Screws shall be steel with rust inhibitive coating.
3. For tile backer board provide manufacturer's recommended screw fastening system.
4. Concealed Acoustical Sealant: Comply with ASTM C919; nondrying, nonhardening, nonskinning, nonstaining, nonbleeding, gunnable sealant for concealed applications.
 - a. All sealants used on site and within the weatherproofing/ waterproof membrane (interior) of the building comply with V.O.C. requirements specified in Section G01600.
5. Exposed Acoustical Sealant: Comply with ASTM C834; nonoxidizing, skinnable, paintable, gunnable sealant for exposed applications, either latex or acrylic based type or acrylic-latex type.
 - a. For sealants used on site and within the weatherproofing/ waterproof membrane (interior) of the building comply with V.O.C. requirements specified in Section G01600.
6. Flexible Closures: For non-fire-rated Work, for filling gaps between steel deck flutes and tops of partitions. Closures shall be fabricated to conform to profile of deck. Closed cell EPDM rubber, with

adhesive. Houston Foam Plastics, Houston, TX, 800-231-1752.

7. Waterproof membrane: For cement-based tile backer board Work, 4-mil fire-retardant polyethylene film.
8. Corner Guards: Protective vertical corner guards on all wall ends, corners and columns. Corner guards shall be constructed of #16 gauge polished stainless steel with rounded corner edges. Refer to the Drawings Details. Secure to wall and seal all exposed edges to walls, columns, etc. with an approved silicone sealant.

PART 3 - EXECUTION

3.01 EXAMINATION AND PREPARATION

A. Inspection

1. Prior to installation of the Work of this Section, carefully inspect the installed Work of all other trades and verify that all such Work is complete to the point where this installation may properly commence.
2. Do not install gypsum board in any location where it may be directly exposed to water.
3. Installation shall comply with manufacturer's recommendations as approved by the Consultant, with all pertinent codes and regulations as a minimum standard.

B. Coordination of Work

Coordinate Work of this Section with the Work of other Divisions which have items installed in, on or contiguous to gypsum board assemblies.

C. Verification of Conditions

Start of Work constitutes acceptance of existing conditions, Contractor shall bring any discrepancies to the attention of the Consultant prior to start of Work.

D. Construction Tolerances.

1. Do not exceed 1/8" in 8 feet variation from plumb or level in any exposed line or surface except at joints between boards. Do not exceed 1/16" variation between planes or abutting edges or ends. Shim as required to

comply with specified tolerances. Variations shall not be visible in finished surfaces.

2. For soffits and ceilings verify that direct suspension system has been installed properly, that main runners are spaced evenly and have been leveled to a tolerance of 1/8" in 12 feet measured both lengthwise on each runner and transversely between parallel runners so that furring member installation may proceed accurately.

3.02 ENVIRONMENTAL REQUIREMENTS

A. General

Comply with requirements of all referenced application standards and manufacturers recommendations for environmental conditions before, during and after gypsum board application.

B. Environmental Conditions

1. Maintain continuous uniform building temperatures of not less than 55°F and not more than 90°F for a minimum of 48 hours prior to, during and following application of gypsum board and joint treatment materials and until joint and finishing compounds have dried.

Conform to more restrictive environmental conditions where required by the manufacturer.

2. Do not install gypsum board in any location where it may be exposed to moisture during the Construction Phase of the Project. Sources of moisture may include: rain, snow, groundwater, flooding and contiguous construction materials. Replace any gypsum board that has been exposed to moisture during the Construction Phase.

C. Ventilation

Ventilate building spaces as required to remove water in excess of that required for drying of joint treatment material immediately after its application. Avoid drafts during dry hot weather to prevent too rapid drying.

D. Drying Time

Provide adequate drying time between coats of joint compound.

3.03 INSTALLATION - STEEL FRAMING

A. General

Comply with ASTM C754 and manufacturers installation instructions for all non-load bearing steel stud installations.

1. Extend all partitions to underside of roof and floor construction unless indicated otherwise. Brace laterally to building structure as required for stability.
2. Where fire-rated work is indicated on Drawings construct assemblies in accordance with the Article herein titled Quality Assurance, Paragraph titled Regulatory Requirements.
3. In kitchen areas, toilet rooms, shower rooms, gymnasium locker rooms, janitors' closet, and other such areas subject to water on the floors, provide a heavy coating of rust preventive paint, suitable for galvanized steel, on all surfaces of bottom runner tracks and the lower 3" of studs.

B. Steel Stud Installation

1. Where partitions abut ceiling or deck construction or vertical structural elements, provide slip or cushion type joint between metal framing and structure as recommended by manufacturer to prevent transfer of structural loads or movements to partitions, except as otherwise indicated. Maintain lateral bracing of partitions to building structure.
2. Accurately align top and bottom tracks. Secure runner tracks as recommended by the framing manufacturer for the upper and lower construction involved, except, do not exceed 24" on center spacing for power driven fasteners. Provide fasteners approximately 2" from corners and ends of tracks.
3. Position studs vertically and engage both floor and top tracks. Install studs at 16" on center maximum spacing unless closer spacing is indicated on the Drawings, or is required for height of partition or transverse loading in order to meet deflection requirements. Fasten studs to track flanges with screws, or as otherwise required to meet fire resistance ratings and code requirements.
 - a. Use full length studs between tracks wherever possible. If necessary, splice studs with a

minimum 8" nested lap and fasten with 2 screws per stud flange.

- b. Provide additional studs to support inside corners at partition intersections, and to support outside corners and terminations of partitions (and both sides of control joints).
4. Frame openings other than door openings to comply with details shown and manufacturer's instructions. Provide full length studs adjacent to jambs and horizontal header and sill tracks. Extend studs to underside of roof or floor construction above.
5. Provide two 18 gage studs at each door jamb unless heavier gage studs are required by Drawings. Comply with stud manufacturers recommendations for the types of frames and weights of doors used in the project. Provide 14 gage studs surrounding openings to receive interior window guards. Studs shall extend to underside of roof or floor construction above.
6. Construct fire rated partitions, vertical ductwork enclosures, column enclosures, etc. to meet or exceed the rating shown on the Drawings.
7. Where framing is in contact with an exterior masonry wall, install asphalt felt protection strip between metal and masonry.

C. Steel Ground Installation

1. Install steel grounds at all locations where wall hung or wall mounted items such as room signs and other signs, casework, cabinets, chalkboards, display boards, interactive whiteboards and projector brackets, pegboards, hook strips, grab bars, storage shelving, fixtures, toilet compartments, shower and dressing compartments, mirrors, toilet room accessories, lockers, panels, etc. are indicated.
2. Apply steel grounds horizontally to steel studs beginning with first stud beyond item being secured (both directions) prior to installation of gypsum board.
3. Install steel grounds behind top and bottom of each item to be installed, adding grounds as necessary at all points of attachment. Use suitable screws and/or bolts to anchor items. Follow manufacturer's recommendations for proper attachment methods.

4. At resilient clips, extend grounds to cover a minimum of 3 furring channels.

D. Furring Channel Installation

1. Attach hat-shaped metal furring channels to masonry or concrete surfaces; either vertically or horizontally, 16" maximum on center and within 2" of interior corners unless otherwise indicated on Drawings. Attach furring with hammer-set or power driven fasteners through alternate flanges spaced 24" on center. Provide metal furring channel clips.
2. Where furring channel is installed directly to a masonry exterior wall, install asphalt felt protection strip between furring channel and wall.
3. Where splices in channels occur, nest channels 8" at splices and anchor with two fasteners in each wing.

E. Running Channel Installation

Floor and top running channels or stud tracks shall be galvanized cold rolled steel with 1½" extended leg on top runner to allow movement (legs longer as recommended by manufacturer or as required to prevent transfer of structural loads or movements to partitions). Match gage of studs indicated for assembly. Securely fasten to floor, roof or vertical structural elements with fasteners approved by manufacturer, spaced not more than 24" on center. Provide slip or cushion type joint between channel and structural elements as indicated in paragraph titled Steel Stud Installation, above. Maintain lateral bracing of partitions to building structure.

F. Horizontal Bracing or Stiffener Installation

Install metal stud bracing fastened to each partition stud with webs in a horizontal position or horizontal bracing fixed to each stud, installed in accordance with industry standards. Provide continuous horizontal rows of bracing, spaced vertically 4'-0" on center maximum, unless otherwise indicated on Drawings. The uppermost row shall be located 12" from the top of stud. Provide additional bracing as recommended by stud manufacturer.

G. Furring Members for Shaft Walls

Install furring members, including C-H studs and J-Runners, according to stud manufacturers published instructions for required assemblies.

H. Chase Wall Erection

1. Align two parallel rows of floor and top runners spaced apart as detailed. Attach to concrete floor slabs with concrete stub nails or power-driven anchors 24" o.c. maximum, and to structure above in similar fashion.
2. Position steel studs vertically in runners, 16" o.c. maximum unless closer spacing is indicated on the Drawings, or is required for height of partition or transverse loading in order to meet deflection requirements. Position studs with flanges in the same direction, and with studs on opposite sides of chase directly across from each other. Anchor all studs to floor and ceiling runner flanges with fastener tool.

I. Tolerances

Do not exceed 1/8" in 8 feet variation from plumb or level in any exposed line or surface, except at joints between planes or abutting edges or ends. Shim as required to comply with specified tolerances. Variations shall not be visible in finished wall surfaces.

3.04 INSTALLATION - CEILING FRAMING

A. Metal Furring for Ceilings and Soffits

1. Install metal furring members to cold rolled running channels at right angles. Secure with metal furring clips in accordance with manufacturer's printed installation instructions.
2. Space furring at 12" o.c. maximum, and within 4" of walls. Provide 1" clearance between furring end and abutting walls and partitions.
3. Install auxiliary framing at openings for light fixtures, ductwork grilles, access doors as specified in Section 05170 of this Specification. Where necessary, install additional cross-reinforcing to restore lateral stability of grillage.
4. Attach perimeter wall track, angle or trim wherever gypsum board meets vertical surfaces. Mechanically join support members to each other and butt-cut to fit into perimeter track, angle or trim piece.

3.05 INSTALLATION - PANELS**A. Applying and Finishing Panels, General**

Comply with manufacturer's printed installation instructions and recommendations based upon Project conditions, ASTM C840, GA-216, and these Specifications, for all gypsum board application and finishing.

1. Provide wallboard panels of type, thicknesses, and number of layers indicated on the Drawings. Provide multi-layer assemblies using abuse and impact resistant gypsum board panels in conjunction with other types of panels where indicated on the Drawings.
2. Cement-based tile backer board Work shall comply with the same specified requirements as gypsum board Work where applicable. Install panels and treat joints in accordance with ANSI A108.11 and the tile backer board manufacturer's published instructions. Provide 4-mil polyethylene film membrane continuously over studs, between stud space and backer board.
 - a. At exterior walls that include vapor retarding materials such as air barrier systems, the polyethylene film shall be installed with unsealed horizontal laps approximately two feet apart. Install film starting at bottom of wall, and lap each 2-foot high row of film over the row beneath it.
3. Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.
4. Form control joints and expansion joints with space between edges of boards, prepared to receive trim accessories.
5. Work shall be sealed at perimeters, at control and expansion joints, and at all penetrations with continuous beads of acoustical sealant, including a bead at both faces of partitions. Comply with ASTM C919 and all manufacturers recommendations for beads, including sealing of partitions above ceilings. Close off sound-flanking paths around or through the Work. Firestopping required for fire-rated work shall be covered under Section 07270-Firestopping/Smoke Seals.
6. For non-fire-rated work provide flexible EPDM rubber closures, securely held in place, to completely close

all voids between metal deck and tops of partitions and other Work.

7. Where fire-rated work is indicated on Drawings construct assemblies in accordance with the Article herein titled Quality Assurance, Paragraph titled Regulatory Requirements.
8. Install the gypsum board with separate boards in moderate contact but not forced into place. At internal and external corners, conceal the cut edges of the board by overlapping covered edges of the abutting boards. Stagger the boards so that corners of any four boards will not meet at a common point except in vertical corners.
9. Extend all partitions to underside of roof and floor construction, unless indicated otherwise.
10. All interior partitions, unless otherwise indicated, shall have mineral fiber sound attenuating blankets, ASTM C665 Type 1, density 2.5 lbs./cubic foot minimum. Sound attenuating blankets shall be installed friction fitted between studs, completely filling solid the partitions for the full height of the partitions.
11. Where exterior walls are indicated on the Drawings to include insulation between studs, the insulation shall be foil backed mineral fiber insulating blankets, ASTM C665 Type III, Class A, density 3 lbs./cubic foot minimum, filling the space between studs. Foil backing shall be omitted from blankets in exterior walls indicated to have other vapor retarding materials as part of the wall assembly, such as vapor retarding air barrier systems, or tile backer board assemblies with polyethylene membrane.
12. Install ceiling board panels at right angles to framing, minimizing the number of abutting end joints and avoiding abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
13. Fit gypsum panels around ducts, pipes, and conduits.
14. Where partitions intersect open concrete coffers, concrete joists, and other structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by coffers, joists, and other structural members; allow

space to properly install sealant or firestopping as applicable.

15. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments. Provide space to properly install sealant or firestopping as applicable between edges and abutting structural surfaces. Trim edges with U-bead edge trim where edges of gypsum panels are exposed.
16. Fasten the gypsum board with drywall screws as recommended by the gypsum board manufacturer. Drive the required screws with clutch-controlled power screwdrivers. Provide fasteners in gypsum panels according to referenced gypsum board application and finishing standard, manufacturer's written recommendations, and as required for fire-resistance-rated assembly. Maximum spacing shall be as follows:
 - a. Maximum fastener spacing for abuse resistant gypsum board: 8" o.c., except where 12" o.c. is recommended by panel manufacturer.
 - b. Maximum fastener spacing for other panels: 8" o.c.

17. Shaft Walls

Construct with 1" liner panels inserted in C-H studs 24" o.c. maximum, with double layer 5/8" Firecode Core panels screw attached to C-H studs, or as otherwise indicated on the Drawings.

B. Panel Application

1. Single layer application on walls/partitions: install the gypsum board to studs at right angles to the furring or framing members, unless otherwise required for fire-resistance-rated assembly, minimizing end joints. Stagger abutting end joints not less than one framing member in alternate courses of board.
2. Multilayer application on partitions/walls: Apply board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.

3. Make end and edge joints, where required, over furring or framing members. Position boards so that like edges abut, with tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
4. Cover both faces of steel stud partition framing with wallboard as indicated on the Drawings (including above ceilings). For panels manufactured with different textures on opposite faces, follow manufacturers recommendations, based on finish material, to determine which side shall face towards studs.
5. MULTILAYER APPLICATION ON CEILINGS: APPLY GYPSUM BOARD INDICATED FOR BASE LAYERS BEFORE APPLYING BASE LAYERS ON WALLS/PARTITIONS; APPLY FACE LAYERS IN SAME SEQUENCE. APPLY BASE LAYERS AT RIGHT ANGLES TO FRAMING MEMBERS AND OFFSET FACE-LAYER JOINTS 1 FRAMING MEMBER, 12" MINIMUM, FROM PARALLEL BASE-LAYER JOINTS, UNLESS OTHERWISE INDICATED OR REQUIRED BY FIRE-RESISTANCE-RATED ASSEMBLY.
6. Multilayer fastening methods: fasten base layers and face layers separately to supports with screws unless otherwise indicated or required by fire-resistance-rated assembly.

C. Finishing and Joint Treatment

1. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
2. Prefill open joints and damaged surface areas.
3. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.
4. Gypsum Board Finish Levels: Finish panels to levels indicated below, according to ASTM C840 and as indicated, for locations as follows:

a. Concealed locations

ASTM C840 - Level 3: Embed tape and apply separate first and fill coats of joint compound to tape, fasteners, and trim in ceiling plenum areas, other concealed areas, and where panels are substrate for tile, unless a higher level of finish is required for fire-resistance rated assemblies.

b. Exposed locations

ASTM C840 - Level 5, with finished surfaces completely flat and uniform, with no visible irregularities or imperfections: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges, and apply skim coat of joint compound over entire surface at panel and trim surfaces that will be exposed to view.

5. Tile backer units: treat joints according to manufacturer's written instructions. Finished surface of tile backer board shall be smooth and free from any imperfections, depressions, or raised areas that would inhibit the proper application of tile finish over the boards.

6. Outside Corners

- a. Install corner bead fitting neatly over the corner and apply compound to both sides of corner.
- b. Treat the corner with joint compound as recommended by accessory manufacturer, allowing compound to dry between coats. Final coat shall completely cover corner.

7. Inside Corners

Treat as specified for joints, except that the reinforcing tape shall be folded lengthwise through the middle and fitted neatly into corner.

8. Properly prepare surfaces to receive painting, coating and tile finishes.

D. Other Trim

1. General: The Drawings do not purport to show all locations and all requirements for trim in connection

with the Work of this Section. Carefully study the Drawings and the installation; provide in place all trim normally recommended by the manufacturer of the gypsum board used.

2. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Provide type with face flange to receive joint compound, except where semi-finished type is shown on the Drawings. Install L-type trim where work is tightly abutted to other work, and install special kerf-type where other work is kerfed to receive long leg of L-type trim. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).
3. Install L-type trim at bottom edge of wallboard in all Corridors, Lobbies and Vestibules, and as indicated on the Drawings. Bottom edge shall be held 1/2" above concrete slab in these areas.
4. Installation: Install the trim in strict accordance with the manufacturer's recommended methods of installation.

E. Control Joints

Provide control joints where indicated on the Drawings. If not indicated on the Drawings, provide control joints at spacing not exceeding the recommendations of the gypsum board manufacturer, and not more than 30'-0" apart.

Control joints shall be arranged neatly. If the pattern of control joints is not indicated on the Drawings, submit shop drawings illustrating the proposed location of all control joints for review by the Consultant.

In fire-rated assemblies construct control joints in accordance with reports of fire tests of assemblies that have met the fire-rating requirements. Behind control joints provide gypsum board strips fastened to web of stud in accordance with Gypsum Association Fire Resistance Design Manual, or provide other configuration demonstrated by testing to maintain fire-rating.

2. Location of Control Joints in Vertical Surfaces (eg., Walls):

Unless otherwise unfeasible, control joints shall be aligned with the edges of openings in the partition (such as door frames, window frames, louvers, etc.)

Control joints shall extend from the finished floor through the entire height of the gypsum board.

3. Location of Control joints in Horizontal Surfaces (eg., Ceilings and Soffits):

Unless otherwise unfeasible, control joints shall be aligned with the edges of rectangular openings in the ceiling (such as light fixtures, grilles, louvers etc.) or on the centerline of round openings (such as sprinkler heads, speakers or round light fixtures).

3.06 CLEAN UP AND PROTECTION

- A. In addition to the requirements of these Specifications, use all necessary care during execution of this portion of the Work to prevent scattering of gypsum board scraps and dust and to prevent tracking of joint and finishing compound onto floor surfaces. At completion of each segment of installation in a room or space, promptly pick up and remove from the working area all scraps, debris and surplus material of this Section.

END OF SECTION

SECTION 09510
ACOUSTICAL CEILINGS

PART 1 - GENERAL**1.01 DESCRIPTION OF WORK**

A. Provide acoustical ceiling Work as indicated on Drawings and as specified herein, including the following:

1. Acoustical Mineral Fiber Panel and Tile Ceilings
 - a. Lay-in panel installation - exposed grid
2. All repairs to existing ceiling removed and reinstalled.

1.03 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

B. American Society for Testing and Materials (ASTM), latest edition.

C423	Test Method for Sound Absorption and Sound Absorption Coefficient by the Reverberation Room Method.
C635	Metal Suspension System for Acoustical Tile and Lay-In Panel Ceilings.
C636	Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
D1779	Specification for Adhesion for Acoustical Materials
E84	Surface Burning Characteristics of Building Materials.
E90	Standard Test Method for Laboratory Sound Transmission Class

- E119 Method for Fire Tests of Building Construction and Materials.
- E413 Determination of Sound Transmission Class
- E1264 Standard Classification for Acoustical Ceiling Products.
- E1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a common Ceiling Plenum (CAC)
- E1477 Standard Test Method for Luminance Reflectance Factor (LR) LR1 >75%
- C. AMA-1-II Ceiling Sound Transmission Test By Two-Room Method
- D. Underwriters Laboratories Inc. (UL)
Fire Resistance Directory
- E. Acoustical and Insulation Materials Association, "Job Conditions".
- F. New York State Building Code.

1.05 **SUBMITTALS**

A. Product Data

Submit manufacturer's product specifications and installation instructions for ceiling materials, indicating compliance with applicable requirements. Include information pertaining to fire performance, flame spread, and smoke development.

B. Shop Drawings

Submit shop drawing details for each space indicating the relationship to mechanical and electrical Work and other items penetrating or connected to the ceiling. Indicate framing and support details for the ceiling Work.

C. Samples

1. Submit samples of the following materials, prior to installation;

- a. Acoustical panels: 6"x6" samples of each type, pattern and color.
- b. Lay-in mineral fiber acoustical panel with field cut tegular edge on one edge, painted to match factory tegular edges. The other three edges shall have manufactured tegular profile: 12" x 24" sample.
- c. Metal Panel Ceiling units: Full size sample of each type and finish.
- d. Exposed runners and moldings: 8" long samples of each color and system type required.
- e. Concealed suspension members: 1 set of each assembly specified.

2. Forward each approved sample type to Mechanical Installer for purpose of matching diffusers.

D. Quality Assurance Submittals

1. Affidavit certifying experience of the installation company.
2. Certification and listing by an Approved Agency in accordance with NYC Dept. of Buildings rules, indicating that the materials and assemblies regulated by the New York State Building Code are acceptable for the intended use. When test methods are stipulated in the New York State Building Code, the tests utilized shall be stated in the Certification. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.

E. Project Closeout Submittals

1. Guarantee
2. Extra Materials (Attic Stock)

F. Low Emitting Materials Compliance Submittals

1. Provide documentation for each sealant and adhesive to be used indicating that the sealants and adhesives comply with V.O.C. requirements as stated in Specification Section G01600.

1.06 QUALITY ASSURANCE**A. Qualifications**

Installer is to be a firm with not less than five years of successful experience in the installation of specified materials.

B. Regulatory Requirements

1. Building Code: Work of this Section shall conform to all requirements of the New York State Building Code and all applicable regulations of other governmental authorities.
2. Certification and listing by an Approved Agency in accordance with NYS Division of Building Standards and Codes rules. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.

C. Fire Performance Characteristics

Provide ceiling components that are identical to those tested for the following fire performance characteristics, according to ASTM test method, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction. Identify ceiling components with appropriate marking of applicable testing and inspecting agency.

1. Acoustical Mineral Fiber Panel and Tile Ceilings and Metal Panel Ceilings
 - a. Surface Burning Characteristics: Tested per ASTM E84. Tested surfaces shall be the surfaces facing the occupied space.
 - 1) Flame Spread: 25 or less.
 - 2) Smoke Developed: 25 or less.
 - b. All materials exposed to the airflow in ceiling cavity plenums used for supply, return, or exhaust air shall be non-combustible or have a maximum smoke developed index/rating of 50, as defined by and in accordance with NYS Construction Code Sections BC 720 and MC 602.

Flame spread index shall not exceed 25. Tested surfaces shall be the surfaces facing the plenum.

D. Fire Resistance Ratings

When the drawings indicate that the acoustical ceiling construction is part of a fire-rated floor/ceiling or roof/ceiling assembly, provide certification by an Approved Agency, in accordance with NYS BC, indicating approval of the ceiling for use in the assembly described.

E. Coordination of Work

Coordinate layout and installation of ceiling units and suspension system components with other work above, supported by, or penetrating through ceilings, including light fixtures, HVAC equipment, fire-suppression systems and partitions. Resolve all discrepancies and conflicts prior to start of Work.

F. Pre-installation Meeting

Prior to start of Work, installer of ceiling system and representatives of trades involved are to have a conference at the job site, in the presence of the Consultant, to discuss coordination of ceiling system installation and resolve all discrepancies.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Delivery

Deliver all acoustical units in manufacturer's original, unopened packages fully identified with type, finish, performance data and compliance labeling.

B. Storage

1. Store materials where they will be protected against damage from moisture, direct sunlight, surface contamination or other causes.
2. Store ceiling unit containers in space where they will be installed for at least 24 hours prior to installation to stabilize moisture content and temperature.

C. Handling

Handle ceiling units carefully to avoid chipping edges or damaging units in any way.

1.08 PROJECT CONDITIONS

A. Space Enclosure

Do not install interior acoustical ceilings until space is enclosed and weatherproof, wet work in space is completed and dry, work above ceilings is completed, and until air temperature and humidity are maintained at values of final occupancy.

1. Pressurized plenums: Operate HVAC system for not less than 48 hours before beginning acoustical panel or ceiling installation.

1.09 GUARANTEE

A. Work showing defects in workmanship or materials within the one-year guarantee period specified in the Contract shall be corrected as directed by the Campus. Defects include but are not limited to:

1. Panels/tiles or suspension system loose or improperly secured.
2. Panels/tiles or suspension members showing discoloration or cracking.
3. Panels/tiles or suspension members warping, sagging, or deforming.

1.10 EXTRA MATERIALS

A. Deliver extra materials to the Campus' Representative (to be transferred to the custodian). Furnish extra materials, described below, matching products installed, packaged with protective covering for storage and identified with appropriate labels.

1. Mineral fiber ceiling units: Furnish 200 square feet of full size units.

PART 2 - PRODUCTS**2.01 MANUFACTURERS, MODELS**

A. Acoustical Panels

1. Mineral Fiber Composition Panels (24" x 24")

a. USG Interiors Inc.

Product name: "Mars"

Product number: 88785

Environmental
performance type: "ClimaPlus"

b. Armstrong World Industries

Product name: "Ultima"

Product number: 1914

Environmental
performance type: "HumiGuard Plus"

c. CertainTeed Corporation

Product name: "Symphony-

Product number: 1220BB-IOF

Environmental
performance type: "104/90"

B. Direct Metal Suspension Systems

1. Rockfon

2. Donn Corporation/USG Interiors, Inc.

3. Armstrong World Industries, Inc.

4. Suspension members for metal panel ceilings shall be by the manufacturer of the ceiling panels or by a company recommended by the panel manufacturer.

2.02 MATERIALS - ACOUSTICAL PANELS AND TILES**A. Mineral Fiber Panels and Tiles**

1. Provide units per ASTM E1264; of designation, style, finish, color, acoustical range, edge detail and size as indicated below:
 - a. Suspended (Exposed grid, lay-in) Installation

Style:	Silhouette
Size:	24" x 24" x 3/4", or as indicated.
Edge Profile:	Reveal beveled tegular, or as indicated.
Weight:	0.95-1.05 lbs./sq.ft.
NRC:	Min. 0.70
CAC:	Min. 35
Light Reflectance	Min. 0.9 Average
Color:	White
Finish:	Factory finish
2. Panels shall be sag resistant to at least 104°F, 90% RH.
3. Mineral fiber products shall be manufactured with a minimum of 60% of post and pre-consumer content materials.

F. Provide fire-rated ceiling systems when indicated on the Drawings as part of a fire-rated assembly, with ratings as stipulated.

2.03 MATERIALS - METAL SUSPENSION SYSTEMS - DIRECT HUNG**A. Exposed Grid Suspension System**

Manufacturer's standard system, with design and finish as selected by the Project Architect.

1. Structural Classification: Heavy-duty system in accordance with ASTM C635.
2. Face width: 15/16".
3. Main runners: Connect to direct suspension system (refer to Specification Section 05170). Conform to ASTM C635 for heavy-duty classification.

4. Provide runners suitable for attachment of hold-down clips and impact clips as applicable.
5. Hold-Down Clips for Non-Fire-Rated Ceilings: For ceilings composed of lay-in panels, provide hold-down clips spaced 2'-0" o.c. on all cross tees.
6. For metal panel ceilings the exposed grid shall be furnished by the panel manufacturer, or by a company recommended by the panel manufacturer, and finish shall match panels. Main runners and cross runners shall be G60 hot-dipped galvanized steel in accordance with ASTM A653, with aluminum capping.
7. Impact Clips: Provide in high impact areas, including corridors, lobbies, and gymnasiums, and at other locations indicated. Provide manufacturer's impact clip ("keep clip") system designed to absorb impact forces against lay-in panels. Provide number of clips recommended by manufacturer; not less than 4 clips per panel. System shall meet requirements of Article titled "Impaction Ceiling System Installation".

For metal panel ceilings provide Armstrong #414 "butterfly" style removable retention clips, or equal, to retain panels in place except at specific locations where maintenance access is required. Clips shall be easily removable by twisting the "wings" of the clip.

2.04 MISCELLANEOUS MATERIALS

A. Edge Moldings and Trim Pieces

Provide manufacturer's standard molding for edges and penetrations of ceiling units which fit with type of edge detail and suspension system indicated.

B. Panel/Tile Fasteners

Cadmium plated, type recommended by panel/tile manufacturer, but for not less than 1/2" penetration of substrate.

C. Drop Clips

18-gage galvanized steel with key hole slot, or other configuration approved by New York State Division of Standards and Codes for connection of ceiling suspension members to carrying channels.

Drop clips shall be of length required for indicated ceiling height, and to provide clearances for lighting fixtures, mechanical equipment, and other items above the ceiling. Where necessary because of limited clearance, provide clips that connect runners tight to the bottom of carrying channels.

D. Tile Adhesive

1. Comply with ASTM D1779, factory made product recommended by manufacturer, bearing UL label for Class 0-25 flame spread.

E. Primer

In accordance with manufacturer of acoustical tile adhesive, substrate shall be primed with one of the following products prior to application of adhesive to remove any residual which would prevent proper attachment of tile:

1. Chemical Wash
2. Sizing
3. Adhesive base or primer

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine the building before beginning Work to determine that it is properly enclosed and the structure is in proper condition to receive acoustical materials and suspension system. Area shall be broom cleaned and uninterrupted for free movement of rolling scaffold. Do not proceed until satisfactory conditions prevail.
- B. Verify that direct suspension system has been installed properly, that main runners are spaced evenly and have been leveled to a tolerance of 1/8" in 12' measured both lengthwise on each runner and transversely between parallel runners so that indirect suspension system installation may proceed accurately.
- C. Start of Work constitutes acceptance of existing conditions, therefore, contractor is advised to bring any discrepancies to the attention of the Consultant prior to start of Work.

3.02 PREPARATION**A. Coordination**

Provide and coordinate the locations of inserts, clips, or other supports for support of acoustical ceilings.

Determine the length of drop clips required to maintain indicated ceiling height and to provide necessary clearance for electrical, mechanical and other equipment. Where necessary for clearance, clips that connect runners tight to the bottom of carrying channels shall be used.

B. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders and comply with reflected ceiling plans.**3.03 INSTALLATION - GENERAL****A. Install materials in accordance with manufacturer's printed instructions and in compliance with ASTM C636, governing regulations, fire resistance rating requirements, as indicated.**

1. Coordinate requirements for Work of other trades to be built into ceiling system. Provide supplementary framing as required.

B. Arrange directionally-patterned units (if any) in manner shown by reflected ceiling plans, or as approved by the Project Architect. Install in patterns indicated, (balanced borders all sided) symmetrical or centered about centerline of corridors, panels, fixtures, beam haunches, rooms, spaces.**C. Cut as required for installation of electric fixtures, air diffusers, grilles, sprinkler heads, security devices, access doors, etc., provided under other contracts. Verify sizes and locations with other trades.****D. On completion, the ceilings shall present a uniform horizontal plane surface, unless otherwise indicated, free from blemishes and imperfections. Exposed grid cross runners shall fit tightly against adjacent main runners, with no visible gaps.**

- E. Install edge moldings of type indicated at perimeter of acoustical ceiling area and at locations where necessary to conceal edges of acoustical units.
 - 1. Sealant Bed: Apply continuous ribbon of acoustical sealant, concealed on back of vertical leg before installing moldings.
 - 2. Screw-attach moldings to substrate at intervals not over 16" o.c. and not more than 3" from ends, leveling with ceiling suspension system to tolerance of 1/8" in 12'-0". Miter corners accurately and connect securely.
- F. Install panels in coordination with suspension system with suspension members concealed by support of panel units.
- G. Neatly scribe and cut panels to fit accurately at borders, interruptions, and penetrations. The cut edges of tegular lay-in mineral fiber panels shall be field cut to match profile of factory edges, in accordance with manufacturer's printed instructions. Paint the cut edges to match factory finish where exposed to view, using paint supplied by panel manufacturer.

3.07 IMPACTION CEILING SYSTEM INSTALLATION

- A. Must absorb 30 g's of energy.
- B. Must accept a force such as a basketball striking the ceiling plane with sufficient velocity to cause the panel to accelerate at a rate of 20" per second, without damage or dislocation of the panel or suspension system. The ceiling system must also be capable of accepting the decelerating force required to rebound the panel back into proper position on the grid, and without the panel breaking, cracking, or falling out as a result of this force or equivalent abuse.
- C. All acoustical material must be accessible and removable for access into the plenum at any location.
- D. Impaction Deceleration Clip ("keep clip") shall be formed of spring steel to absorb impact, snapping panels back in place.
- E. The exposed suspension components shall ensure proper operation and rebound of the Impaction Deceleration Clip. The suspension components shall be Underwriters Laboratories labeled for two hour fire resistance rating.

- F. Installation shall be in full accordance with manufacturer's instructions, recommendations outlined in ASTM Specification C636, and the current Bulletin of the Acoustical and Insulation Materials Association, consistent with U.L. requirements.
- G. Impaction Deceleration Clip shall be positioned and installed according to the manufacturer's instructions. These clips must provide access to the plenum at any location.

3.08 ADJUSTING AND CLEANING

- A. Clean exposed surfaces of ceilings, including trim, edge moldings, and suspension members; comply with manufacturer's instructions for cleaning and touch-up of minor finish damage.
- B. Remove and replace Work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.
- C. Remove and replace Work that is damaged or soiled by other trades as directed by the Consultant.

END OF SECTION

SECTION 09 90 00
PAINTING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. This Section includes surface preparation and field painting of the following:
1. Exposed interior items and surfaces.
 2. Surface preparation, priming and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.
 3. All existing items and surfaces that remain exposed in the work areas after the installation of new work.
- B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface as directed by the Architect. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.
1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.
- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels as described in Article 2.05A.
- D. When removing or disturbing existing paint on surfaces that have not been tested by the Campus for lead content, assume that the existing paint contains lead. Take necessary precautions to protect workers. Provide measures to separate paint removal work areas from occupied areas, and clean-up and disposal as specified.

1.02 REFERENCES

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
1. Federal Specifications (FS)
 2. American Society of Testing and Materials (ASTM)
 3. N.Y.S. Department of Environmental Conservation

4. U.S. Department of Labor
5. Occupational Safety and Health Administration (OSHA)
6. Steel Structures Painting Council (SSPC)
7. Department of Defense (DOD)

1.03 DEFINITIONS

- A. The term "Painting" as used in this Section, means the application of all coatings such as paint, primer, enamel, varnish, shellac, oil, etc. as listed in the Painting Schedules.
- B. The term "Painting" also includes preparation of surfaces for such applications, and the clean-up as hereinafter specified.
- C. The term "Walls" means all surfaces from floor, or top of base, or top of wainscot, to ceiling or hung ceiling.
 1. Include pilasters, breaks, jambs, reveals, returns, arches.
 2. Include hardboards, pegboards.
 3. Include free standing columns, low partitions.
 4. Include masonry, plaster or gypsum board interiors of wardrobes or closets, cupboards and other enclosed spaces.
- D. The term "Ceilings" means the general overhead horizontal surfaces.
 1. Include cornices, arches, soffits, stair soffits.
 2. Include beam and girder haunches.
 3. Include primed metal cover and border strips.
 4. Include metal frame of ceiling lights and ceiling equipment.
 5. Include side faces of hung or furred ceiling.
- E. Touching-up bare spots specified for previously primed or painted surfaces is in addition to the coats specified for the paint system.
- F. Finishes:
 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 2. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.

3. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.
 4. Full gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60-degree meter.
- G. Concealed: The term “concealed” refers to surfaces, piping, ducts or conduit which cannot be accessed without moving a building element such as within a chase, wall or ceiling.
1. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:
 - a. Furred areas.
 - b. Ceiling plenums.
 - c. Duct shafts.
 - d. Elevator shafts.
- H. The term “exposed” refers to any item which is not concealed.
1. The term “exposed to public view” means situated so that it can be seen from eye level from a public location. A public location is that which is accessible to persons not responsible for operation or maintenance of the building.

1.04 SUBMITTALS

A. Product Data

Provide manufacturers' product literature for all materials specified and material manufacturer's printed directions and recommendations for environmental conditions, surface preparation, priming, mixing, reduction, spreading rate, application, storage and VOC content, as applicable for each of the materials specified.

B. Samples

1. Initial Selection

Submit manufacturer's color charts for each type of finish for approval by the Project Architect. Verify colors specified with manufacturers' color charts for availability and notify the Project Architect if any discrepancies should occur.

2. Verification prior to installation

- a. Contractor shall furnish color chips for surfaces to be painted.

- b. Submit two samples of each color and finish selected on 12" x 12" hardboard.
 - c. Two samples of finish on concrete masonry and metal surfaces.
- 3. Submit samples of stained and varnished wood in triplicate for approval. Samples shall be 4" x 8" samples of the species of wood specified, stained and varnished as required and clearly labeled with type of coating, number of coats applied, etc.
- 4. All samples shall be labeled; and include the following information:
 - a. Manufacturer's name
 - b. Type of paint/stain/hardener
 - c. Manufacturer's stock number
 - d. Color: name and number
 - e. Federal Specification number, as specified
 - f. Federal regulations for amount of lead in paint.
 - g. VOC content

C. Quality Assurance

- 1. Certification that materials for each system are obtained from a single manufacturer.
- 2. Certification that Work shall be performed by personnel with a minimum of three years experience who meet the qualifications set forth in OSHA, 29 CFR 1926.62 (Lead In Construction Standard).
- 3. Certification that material meets or exceeds the performance requirements of Federal Specifications.
- 4. Certification that materials comply with N.Y.C. and N.Y.S. regulations for Volatile Organic Compounds.

D. Testing

Toxicity Characteristic Leaching Procedure (TCLP) testing per Article in Part 3 titled "Disposal of Painted Waste and Debris from Existing Buildings".

E. Guarantee

Provide Guarantee per Article 1.08.

F. Low Emitting Materials Compliance Submittals:

1. Provide documentation for each coating to be used on the building interior indicating that the coatings comply with low V.O.C. requirements as stated below:
 - A. The following list of adhesive and sealant V.O.C limits is for the Contractor's use in selecting adhesives and sealants if specified products are not available or if the Contractor is proposing alternate adhesives and sealants.
 - B. For interior applications (for anything within the building's weatherproofing system), use adhesives and sealants that comply with New York State V.O.C. requirements or the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA method 24), whichever is more stringent:
 1. Wood Glues: 30 g/L.
 2. Metal to Metal Adhesives: 30 g/L.
 3. Adhesives for Porous Materials (Except Wood): 50 g/L.
 4. Subfloor Adhesives: 50 g/L.
 5. Plastic Foam Adhesives: 50 g/L.
 6. Carpet Adhesives: 50 g/L.
 7. Carpet Pad Adhesives: 50 g/L.
 8. VCT and Asphalt Tile Adhesives: 50 g/L.
 9. Cove Base Adhesives: 50 g/L.
 10. Gypsum Board and Panel Adhesives: 50 g/L.
 11. Rubber Floor Adhesives: 60 g/L.
 12. Ceramic Tile Adhesives: 65 g/L.
 13. Multipurpose Construction Adhesives: 70 g/L.
 14. Fiberglass Adhesives: 80 g/L.
 15. Structural Glazing Adhesives: 100 g/L.
 16. Top and Trim Adhesives: 250 g/l.
 17. Structural Wood Member Adhesive: 140 g/l.
 18. Wood Flooring Adhesive: 100 g/L.
 19. Contact Adhesive: 80 g/L.
 20. Special Purpose Contact Adhesive: 250 g/l.
 21. Plastic Cement Welding Compounds: 250 g/L.
 22. ABS Welding Compounds: 325 g/L.
 23. CPVC Welding Compounds: 490 g/L.
 24. PVC Welding Compounds: 510 g/L.
 25. Adhesive Primer for Plastic: 550 g/L.
 26. Architectural Sealants: 250 g/L less water.
 27. Non-Membrane Roof Sealants: 300 g/l less water.
 28. Single Ply Roof Membrane Sealants: 450 g/l less water.
 29. All other Sealants: 420 g/l less water.
 30. Sealant Primers for Nonporous Substrates: 250 g/L less water.
 31. Sealant Primers for Porous Substrates: 775 g/L less water.

1.05 QUALITY ASSURANCE**A. General**

1. All painting materials shall arrive at the job ready-mixed.
2. Varnish containers shall not exceed 5 gallon capacity.
3. Remove all rejected materials from the premises immediately.
4. All thinning and tinting materials shall be as recommended by the manufacturer. Generally, all paints shall not require additional thinning.
5. Verify that the specified shop prime paint for each applicable item in this Project is compatible with the total coating system, prior to application.
6. Materials selected for each system type shall be products of a single manufacturer.

B. Qualifications

1. Work of this Section shall be performed by personnel with a minimum of three years experience in performing this type of Work.
2. The Contractor shall ensure that all employees meet the qualifications set forth in OSHA, 29 CFR 1926.62 (Lead In Construction Standard).

C. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.**D. Regulatory Requirements**

1. N.Y.S. Building Code, latest edition
2. N.Y.S. Department of Environmental Conservation -Part 205 on "Architectural Surface Coatings" - for (VOC) Volatile Organic Compounds.
3. Steel Structures Painting Council (SSPC).
4. U.S. Department of Labor, Occupational Safety and Health Administration, Construction Industry Standards (29 CFR 1926/1910) Revised 10/1/79, Washington, D.C.
5. Occupational Safety and Health Administration (OSHA) 29 CFR 1926.62 (Lead In Construction Standard).
6. New York State Department of Environmental Conservation regulations, 6 NYCRR part 364.

E. Certifications

Federal Specifications: When materials are specified to comply with Federal Specifications, products will be accepted which meet or exceed the performance requirements of such Federal Specifications and comply with all regulations currently in effect.

1. Indicate that material complies with Federal Specifications by including the Federal Specifications number on the container label or on the product literature, or submit a statement with the Product Data stating that material meets or exceeds the performance requirements of the Federal Specifications.

F. Field Samples

1. Provide samples of each color and finish, under natural lighting conditions, in a location where each finish is to be applied.
2. The Campus will request review of first completed room, space or item of each color scheme required by the Project Architect for color, texture and workmanship.
3. First acceptable room, space or item will be used as project standard for each color scheme, or finish.
4. Primer coat is to be inspected and approved in all locations before any subsequent finish coats are applied.
5. In existing building locations; repair of existing base surface is to be approved prior to commencement of painting.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Delivery

Deliver materials to the site in original, unopened containers bearing manufacturers name and label containing the following information:

1. Product name or title of material
2. Manufacturer's stock number, batch number, VOC content in grams per liter and date of manufacture.
3. Manufacturer's name
4. Federal Specification number, if applicable.
5. Federal regulations for amount of lead in paint (less the 0.06% lead in non-volatile ingredients)
6. Contents by volume for major pigment and vehicle constitutions

7. Thinning instructions
8. Application instructions
9. Color name and number

B. Storage

1. The Campus' Representative will designate space on premises for storage of materials. Contractor shall restrict storage in this area to paint materials and related equipment, and provide the following:
 - a. Provide one (1) approved chemical dry fire extinguisher equal to 20 lb. CO₂ rating in all assigned rooms or locations where painting materials are stored. Fire extinguisher shall bear the label of the National Board of Fire Underwriters and tag of most recent inspection.
 - b. Provide three (3) standard size red fire pails with clean sand in above locations. At the completion of project, fire extinguishers and pails shall become property of Contractor.
2. Maintain storage area in clean condition, store materials not in use in tightly covered containers. Remove oily rags, waste and empty containers from site each night.
3. Provide the Campus' Representative with one key for each space if spaces are to be kept locked when not in use.
4. Protect all materials from freezing.

1.07 PROJECT CONDITIONS

A. Environmental Requirements

1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied.
2. Do not apply finish in areas where dust is being generated or will be generated while the material is drying.
3. Provide paint and coating products to comply with applicable environmental regulations, VOC requirements and local authorities.
4. In all areas, spaces and rooms being painted, the Contractor shall ensure that there is adequate ventilation to ensure proper paint drying, along with minimizing paint odors. See Section S01900 also for requirements regarding fumes, ventilation and Material Safety Data Sheets.

5. The Contractor shall ensure that all requirements of OSHA 29 CFR 1926.62 (Lead in Construction Standard) are adhered to during the project. In addition, the Contractor shall ensure that proper work area protection and clean-up procedures (as described in this Section) are strictly adhered to during all phases on the project.

1.08 GUARANTEES

- A. Adherence of workmanship and materials to Specifications requirements shall be maintained for the one year Contract guarantee period. These requirements shall include the following:
 1. There shall be no evidence of blistering, peeling, crazing, alligatoring, streaking, staining, or chalking.
 2. Dirt shall be removed without blemishing the finish by washing with mild soap and water.
 3. Colors of surfaces shall remain free from serious fading; the variation, if any, shall be uniform.
- B. Correct all defects, appearing within the guarantee period, by removal of the defective work and replacement as directed.
- C. All corrective measures shall be the Contractor's responsibility, and shall be made at no extra cost to the Campus or the Fund. The requirements set forth in Part 3 of these Specifications shall be strictly adhered to.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with specified requirements, provide "First Line" or "Top Quality" products of one of the following manufacturers:
 1. Benjamin Moore and Co.
 2. PPG Industries, Pittsburgh Paints Inc.
 3. The Sherwin-Williams Co.

2.02 MATERIALS

- A. Provide products which meet all N.Y.S. Part 205-VOC requirements for applications outlined herein.
- B. Provide products which meet all Federal regulations for amount of lead in paint (less than 0.06% lead in non-volatile ingredients).

- C. Provide best quality grade of various types of coatings as regularly manufactured by the paint materials manufacturers. Materials not displaying manufacturers' identification as a standard, best-grade product will not be acceptable.
- D. Use only thinners approved by paint manufacturers for applications intended and use only within recommended limits.

2.03 **REFERENCE STANDARDS**

- A. Paint materials shall meet or exceed the requirements of the following standards:

Federal Specifications

1. Primers, Sealers, Undercoats

- a. Metal Primer for Galvanized surfaces:
 - FS TT-P-001984
 - FS TT-P-650-C
- b. Metal Primer Aluminum or Steel surfaces:
 - FS TT-P-57B
- c. Primer Sealer, Latex Base:
 - FS TT-P-650C
- d. Alkyd Primer (Corrosion Inhibiting)
Lead and Chromate Free,
VOC Complying
 - FS TT-P664C
- e. Acrylic Primer
 - TT-P-650-C
- f. Wood Primer, Exterior:
 - FS TT-P-25

2. Finish Paints

- c. Gloss Acrylic Latex Enamel:
 - FS TT-P-1511-B
- d. Flat Vinyl Acrylic Latex
Interior:
 - TT-P-29J
- e. Semi-Gloss Vinyl Acrylic
Latex Enamel, Interior:
 - TT-P-1511-B
- f. Alkyd Odorless Semi-Gloss
Enamel: FS TT-E-509C for white
and tints; Class A for deep colors.
 - FS TT-E-529
- g. Aluminum Paint (Ready Mixed):
 - FS TT-P-38D.
- h. Heat Resistant Semi-Gloss
 - FS TT-E-496

Enamel (400°F max. surface temperature):

3. Miscellaneous Materials:

- a. Mineral Spirits (Petroleum Paint Thinner): FS TT-T-291
- b. Color Pigments: Pure, non-fading, finely ground pigments, at least 99 percent passing a 325 mesh sieve. Color pigments that are to be used on masonry, concrete and plaster shall be lime proof - FS-TT-P-381.
- c. Putty: Linseed-Oil type for Wood Sash Glazing -FS-TT-P-791B.
- d. Shellac: Two pound cut shellac, FS TT-S-300
- e. Paste Wood Filler: FS TT-F-336
- f. Plastic Wood Filler: FS TT-F-340C.
- g. Surface Sealer: Pigmented Oil for Plaster & Wallboard - FS-TT-S-179.
- h. Linseed Oil: (Boiled) FS A-A-371A
- i. Linseed Oil: aw) FS A-A-379A
- j. Lacquer (Brushing) Clear and Pigmented: FS-TT-L-26C.
- k. Lacquer, Rubbing, Clear: FS-TT-L-57C
- l. Lacquer, Spraying Clear and Pigmented for Interior and Exterior Use: FS-TT-L-58E.

B. Miscellaneous Standards and Requirements

- 1. Turpentine: ASTM D13.
- 2. Cold Galvanizing Compound: Single component material conforming to ASTM A780 giving 96% pure zinc in the dried film.
- 3. Cleaning Solvents: Low toxicity; flash point in excess of 100°F.
- 4. Spackling Compound: ASTM C475.
- 5. Polyester Filler: Polyester resin base autobody filler standard weight or finishing grade required by conditions; Marson's "White Lightning" and "Topcoat."

2.04 COLORS**A. Selection**

1. Paint colors, surface treatments and finishes will be selected by the Project Architect.
2. Color Schedule will be issued to the Contractor after award of the Contract.
 - a. Final acceptance of colors will be from actual job applications.

2.05 PAINTING SCHEDULE**A. Surfaces not to be painted, unless specifically indicated otherwise:**

1. Polished or bright metals: Aluminum, bronze, brass, chrome, nickel, stainless steel, copper.
3. Glass
6. Ceramic Materials
7. Factory Pre-Finished Masonry Block.
8. Resilient Flooring Materials.
10. Acoustical Tile
11. Chalk Boards; Cork Boards; Bulletin Boards; Plastic Laminate
12. Mechanical Equipment, Steel Shelving, and Cabinets, which are factory finished.
13. General Construction Items with factory applied final finish.
14. Factory finished Wood Doors.
15. Acoustic Tile & Metal Pan Ceiling
16. Pipe and duct Spaces and utility tunnels, including items within the space such as pipes, ducts and conduits.
19. Concealed Ducts, Pipes, and Conduit.
20. Metal Lockers
22. Light Fixtures
23. Electrical Distribution Cabinets

25. Furred Areas
26. Ceiling Plenums
28. Mechanical Linkages
29. Sensing Devices
30. Motor and Fan Shafts
31. Light Switch and Electrical Outlet Covers
32. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

B. Interior Finish Schedule - Standard

1. All new and previously unpainted, surfaces shall receive one (1) prime coat and two (2) finish coats unless otherwise specified.
2. All previously painted surfaces shall be spot primed as needed and receive (2) finish coats unless otherwise specified.
3. First or Prime coats shall vary with substrates and are outlined in Article 2.07 - Interior Paint Systems.

Finish coats in areas indicated shall have the sheen and gloss levels specified below

	<u>Location</u>	<u>Type</u>
a.	Offices and Office Closets,.....	(Semi Gloss)
b.	Store Rooms, Toilets, Locker Rooms, Medical Suite, Guidance Suite, Laboratories, Preparation Rooms	(Semi Gloss)
d.	All plaster and gypsum board ceilings shall be off white	(Flat)
e.	All interior gypsum board walls throughout the building not otherwise specified	(Semi Gloss)

2.06 INTERIOR PAINT SYSTEMS

A. Concrete Masonry Units

1. Semi-Gloss Finish:

*1st Coat - Vinyl Acrylic Latex Block Filler, or 100% acrylic resin block filler/surfacers as recommended by manufacturer of succeeding coats.

**1st Coat - Vinyl Acrylic Latex Primer-Sealer (Flat) -- 1.0 Mils DFT

2nd & 3rd Coats - Semi-Gloss Vinyl Acrylic Latex Enamel -- 1.3 Mils DFT each coat

2. Gloss Finish:

*1st Coat - Vinyl Acrylic Latex Block Filler, or 100% acrylic resin block filler/surfacers as recommended by manufacturer of succeeding coats.

**1st Coat - Vinyl Acrylic Latex Primer-Sealer (Flat) -- 1.0 Mils DFT

2nd & 3rd Coats - Gloss Acrylic Latex Enamel -- 1.2 Mils DFT each coat

*Apply filler coat on new and previously unpainted concrete masonry units at a rate to ensure complete coverage with all pores filled. If required, provide in two (2) or more coats.

** Spot prime previously painted concrete masonry unit surfaces as needed.

D. Gypsum Drywall and Plaster:

1. Flat Finish (ceilings only):

1st Coat - Vinyl Acrylic Latex Primer Sealer (Flat)-- 1.0 Mils DFT

2nd & 3rd Coats - Flat Vinyl Acrylic Latex -- 1.3 Mils DFT each coat

2. Semi-Gloss Finish:

1st Coat - Vinyl Acrylic Latex Primer Sealer -- 1.0 Mils DFT

2nd & 3rd Coats - Semi-Gloss Vinyl Acrylic Latex Enamel -- 1.3 Mils DFT each coat

3. Gloss Finish:

1st Coat - Vinyl Acrylic Latex
Primer Sealer -- 1.0 Mils DFT

2nd & 3rd Coats -
Gloss Acrylic Latex Enamel -- 1.2 Mils DFT
each coat

4. Wall & Ceiling Finish (Compounding Suite):
(Corotech Pre-catalyzed Waterborne Epoxy Eggshell as
Basis of Design)

1st Coat - Acrylic Latex Drywall
Primer Sealer -- 1.0 Mils DFT

2nd & 3rd Coats - Pre-catalyzed waterborne epoxy eggshell-- 1.5-1.7
Mils DFT each coat

5. For use over existing oil based paints

100% Acrylic Primer -- 1.0 mils DFT
Tinted as required to approximate
Finish color

2nd & 3rd Coats -
Semi-Gloss Vinyl Acrylic Latex
Enamel -- 1.3 Mils DFT
each coat

OR

2nd & 3rd Coats -
Gloss Acrylic Latex Enamel -- 1.2 Mils DFT
each coat

F. Ferrous Metal:

1. Flat Finish: Metal ceilings, jamb and head sections, coat and hat rack, metal
shelves.

*1st Coat - Alkyd Modified Acrylic Rust Preventive
Latex Primer -- 1.6 Mils DFT

2nd & 3rd Coats
Flat Vinyl Acrylic Latex -- 1.3 Mils DFT
each coat

2. Semi-Gloss Finish: Convactor enclosures, grilles, access doors, frames,
Steel Doors and Frames, Trim, Partitions, Screens, Demountable Office
Partitions, Office Railings, Wire mesh work.

*1st Coat - Alkyd Modified Acrylic Rust Preventive
Latex Primer -- 1.6 Mils DFT

2nd & 3rd Coats -
Semi-Gloss Vinyl Acrylic Latex
Enamel -- 1.3 Mils DFT
each coat

3. Gloss Finish:

*1st Coat - Alkyd Modified Acrylic Rust Preventive
Latex Primer -- 1.6 Mils DFT

2nd & 3rd Coats -
Gloss Acrylic Latex Enamel -- 1.2 Mils DFT
each coat

* Provide full prime coat on new and previously unpainted surfaces. Spot prime previously painted surfaces, including shop-primed items, as needed. Items shop primed with modified alkyd equal to Tnemec 10-99 primer shall be touched up with same primer. See related specification sections.

G. Zinc-Coated Metal

1. Flat Finish:

1st Coat (New) - Alkyd Modified Vinyl Acrylic
Latex Primer -- 1.2 Mils DFT

*1st Coat (Repaint) - Alkyd Modified Acrylic Rust
Preventive Latex Primer -- 1.6 Mils DFT

2nd & 3rd Coats
Flat Vinyl Acrylic Latex -- 1.3 Mils DFT
each coat

2. Semi-Gloss Finish: Railings, wire-mesh work.

1st Coat (New) - Alkyd Modified Vinyl Acrylic
Latex Primer -- 1.2 Mils DFT

*1st Coat (Repaint) - Alkyd Modified Acrylic Rust
Preventive Latex Primer -- 1.6 Mils DFT

2nd & 3rd Coats
Semi-Gloss Vinyl Acrylic Latex
Enamel -- 1.3 Mils DFT
each coat

3. Gloss Finish:

1st Coat (New) - Alkyd Modified Vinyl Acrylic Latex Primer	--	1.2 Mils DFT
*1st Coat (Repaint) - Alkyd Modified Acrylic Rust Preventive Latex Primer	--	1.6 Mils DFT
2nd & 3rd Coats - Gloss Acrylic Latex Enamel	--	1.2 Mils DFT/ each coat

* Spot prime as needed.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions

- I. The application of painter's finish to any surface shall be taken to indicate that the Contractor considers such surfaces suitable for a first-class finish.
2. Do not apply painter's finish in any locations until the Work of other Contractors that might damage the new finish is completed.
3. Notify the Consultant in writing regarding Work by others that does not provide a suitable surface for the new finish.
4. In case of dispute regarding the suitability of any surface, the Campus' decision shall be final and conclusive upon all concerned.
5. Contractor shall check the compatibility of previously painted surface with the new coating by applying a test panel 4 foot wide x wall height. Allow test panel to dry thoroughly; verify proper adhesion before proceeding with painting Work.

3.02 PREPARATION AND APPLICATION - EXISTING BUILDING

A. Protection

1. In cases where the painting of surfaces involves removal or disturbance of existing paint and the paint is known or assumed to be lead-based paint, the following protection requirements shall apply:
 - a. All objects near or adjacent to the surface(s) to be painted shall be moved a minimum of three feet away from that surface(s). Any immovable object, and the floor, within the three foot "work area" shall be covered with one layer of 6-mil polyethylene, sealed on all edges to prevent the penetration of dust and debris. If the ceiling is to be painted, all objects in the room and the floor of the room shall be covered in this manner.

- b. All objects bordering the three-foot work area shall be completely covered with clean cloths, heavy building paper or clean plastic covering.
 - c. If, during the removal of existing paint, the Contractor notices paint chips or other debris related to the ongoing work on objects beyond the border of the three foot work area, these objects shall be cleaned by HEPA vacuuming and wet-wiping and then covered as described in (b) above.
 - d. For exterior metal surfaces on the building or site the ground beneath the work area shall be surrounded on all sides by a washable construction tarp or 10-mil polyethylene. The covering need not be airtight; however, it must be of adequate size and durability to completely enclose the work area and prevent the dispersal of any paint chips or dust during paint removal activities. Any dust and debris shall be contained in the work area and shall be removed immediately upon generation. Protect from damage landscaping, paving, and other improvements near the building. Protect and seal all windows and openings within the work area with a minimum of 1 layer of 6-mil polyethylene sheeting.
 - e. The protection shall remain in place during all paint removal activities.
 - f. All protection is to be carefully removed, cleaned or discarded after painting is complete.
2. In cases where the painting of surfaces does not involve the removal or disturbance of existing paint or the paint is not lead-based as determined by testing by the Campus, the following protection requirements shall apply:
- a. In each area to be painted, cover and protect furniture, equipment and floors from damage with clean cloths, heavy building paper or clean plastic covering secured in place. All protection is to be carefully removed, cleaned or discarded after painting is complete.

B. Removal of Existing Work

- 1. Remove wire guards, screens, grilles and similar items as necessary to paint properly all surfaces, windows and doors, behind these items.
 - a. These items shall be HEPA vacuumed and wet-cleaned once removed. Once cleaned, the items shall be placed on 6-mil polyethylene sheeting (or equivalent) and covered with a second layer of 6-mil polyethylene sheeting.

- b. If paint is to be removed from these items, the contractor shall ensure that the items are taken to a separate, non-occupied space prior to scraping and repainting.
2. Remove and paint behind pictures, signs, shades, drapes, furniture, cabinets, lockers and similar items that are not secured to walls.
3. Unless otherwise specified, radiators, convectors, univents need not be removed providing all visible surfaces of these items and visible surfaces behind them are properly painted.
4. Carefully mark removed work for identification and replace in the original location unless otherwise directed.

C. Surface Preparation

1. Gently wet mist the surface to be scraped with water, then remove all loose paint with scraper and putty knife.
2. Sand existing surfaces to dull sheen and gloss. Before sanding, wet mist the area to be sanded. (Power sanding without a HEPA-filtered vacuum recovery system is not allowed).
3. Remove dust by washing with water, using damp sponge or cloth.
4. After washing, spot prime grease and water stains; magic markers marks, crayon marks, lipstick marks, etc; with a quick-drying alcohol base primer sealer to prevent bleeding.
5. Fill all cracks and holes with appropriate filler material, wet mist and sand flush with adjacent surfaces and spot prime. (Power sanding without a HEPA-filtered vacuum recovery system is not allowed).
6. Existing paint that was not removed with scraper and which appears to be sound shall receive spackling compound around perimeter high spots and feathered out so that surface is smooth. Repair gouges created by the scraping process and other imperfections in the existing surface with spackling compound to provide a smooth, even finished surface.
7. Apply number of finish coats specified herein or as many as may be necessary to obtain the proper finish and completely cover the substrate.
8. Cement Plaster: Coat surfaces to be patched with an approved bonding agent. Patch with an approved mortar patching mix and finish to match texture of adjacent surfaces.
9. Existing Woodwork:
 - a. Prepare surfaces as indicated in Art. 3.02, C., Subparagraphs 1., 2., 3., 4., above.

- b. Puttying: Fill cracks, open joints, nail holes and similar defects in existing woodwork specified to be painted or varnished with putty or plastic filler. Putty stop nail holes in all new woodwork specified to be painted or stained and varnished. Prime or seal all surfaces in contact with new putty. Color interior putty to match the finish.
 - c. Touch-Up
 - 1. Spot prime defects in existing Work and Work primed under other Paragraphs of Work as necessary to produce an even plane in the new finish.
 - 2. All worn, scaled, blistered, crackled and discolored places in the existing stained and varnished work specified to be revarnished shall be wet-misted prior to being scraped or sanded, then filled and touched up with stain as required to equalize the color. (Power sanding without a HEPA-filtered vacuum recovery system is not allowed).
 - 3. Touch-up and equalize the color of new woodwork specified to be stained and varnished where damaged, due to job fitting and trimming.
 - 4. Touch-up all pitch streaks and knots in woodwork with shellac.
10. Existing Metal:
- a. Prepare surfaces as indicated in Art. 3.02,C., Subparagraphs 1., 2., 3., 4., above.
 - b. Machine tool clean exposed steel to an SSPC-SP3 surface preparation.
 - b. For steel surfaces exposed to view, repair defects in surfaces to provide for an even plane in the new finish. Use auto-body filler to even out surface and sand smooth.
11. Wood Sash: Clean and oil pulley stiles of wood sash with one coat of stained, boiled linseed oil at completion of painting of sash.
12. Glazing Repairs
- a. Cut out loose and cracked putty on doors and windows. Replace cut out and missing putty with elastic glazing compound. If the putty contains asbestos, the Contractor shall abate the putty in accordance with the procedures specified in Section 02 82 13 - Asbestos Abatement.
 - b. Prime Surfaces before applying glazing compound.

3.03 PREPARATION - NEW BUILDINGS**A. Protection**

Cover or otherwise protect finished Work of other trades and surfaces not to be painted concurrently or not to be painted.

B. Surface Preparation

1. Perform preparation and cleaning procedures in accordance with the paint manufacturer's instructions and as specified.

a. Sand bare spots and abraded areas of shop primed and previously painted surfaces. Where paint is missing or removed, sand surrounding edges of sound paint film so edges of existing paint do not show through the finished system.

b. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease with clean cloths and cleaning solvents prior to other cleaning procedures. Program the cleaning and painting so that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

2. Ferrous Metals

a. Remove dirt and grease with cleaning solvents that will not affect shop prime coat. Wipe off with clean cloths.

b. Remove rust, mill scale and defective paint down to bare metal, using scraper, sandpaper, or wire brush. Grind if necessary to remove shoulders at edge of sound paint to prevent flaws from photographing finish coats.

3. Galvanized Metal

a. Remove dust and oil with mineral spirits and wipe dry with clean cloth. Repair welded and abraded surfaces with a 2 mil (dry) minimum thick coating of cold galvanizing compound in conformance with ASTM A780; comply with manufacturer's application instructions.

b. Repair steel decks and cold-formed metal framing immediately following installation.

c. For hot-dipped galvanized surfaces, allow 6 months of weathering prior to cleaning specified in a. above. Immediately before painting, roughen surface with course sandpaper. Zinc metallized surfaces do not require sanding.

4. Steel Doors and Frames

- a. Fill small dents, pits, and other minor imperfections flush and smooth with polyester filler.
- b. Apply and finish filler in accordance with manufacturer's instructions.

5. Wood

- a. Remove scratches, dirt, stains, raised grain and other surface defects.
- b. Fine sand wood surfaces to be natural finished to remove rough spots, dirt and markings.
- c. Shellac knots, pitch streaks and sap spots before priming coat is applied.
- d. Putty nails, holes and other indentations flush with adjacent surfaces. Color putty to match finish of wood.
- e. Touch-up raw surfaces and edges of primed woodwork resulting from cutting and fitting at the job before the wood is installed. Use same kind of material used for shop priming or use type of primer specified for the painting system.

6. Plaster

- a. Scrape and sand plaster nibs smooth. Spackle, smooth, and seal cracks, holes and other defects to provide an even, smooth surface.

7. Gypsum Board: Fill cracks and other blemishes with spackling or patching compound and sand smooth.

8. Concrete and Concrete Unit Masonry: Prepare cementitious surfaces by removing efflorescence, chalk, dust, grease and oils. Concrete and mortar shall be cured as recommended by paint manufacturer.

C. Materials Preparation

1. Mix and prepare painting materials in accordance with the manufacturer's directions.
2. Stir materials before and during application to produce and maintain a mixture of uniform density. Do not stir any film that may form on the surface of materials into the material; remove the film and strain the material before using.
3. Thinning: Use only thinners recommended by the paint manufacturer and use only within the recommended or specified limits.

D. Moisture Meter Test

1. Do not apply initial coating until moisture content of surface is within limitations recommended by paint manufacturer.
2. Reading shall be approximately 8% on meter.
3. Test surfaces with moisture meter at various areas e.g.: Top, bottom and middle of wall, especially where piping occurs and at exterior walls, in the presence of the Consultant.
4. Moisture content shall be approved by the Consultant before any Work is started.

3.04 APPLICATION

A. General

1. No Work shall be performed where cement or plaster is being applied or is in the process of drying.
2. No Work shall be performed in spaces that are not broom clean and free of dust and waste.
3. Apply paint materials to produce smooth finished surfaces, free of brush or roller marks, drops, runs, or sags.
4. Paint materials shall be kept at a proper and uniform consistency.
5. Thin only when necessary to achieve best results.
6. Thinners shall be material recommended by manufacturer of paint, and in quantity as recommended.
7. Excessive use of thinner as indicated by variation in absorption, lack of "hide", thickness of dry film, mottled or streaky coat, shall be cause for rejection. Correct as directed.
8. Thinning of varnish or aluminum paint prohibited.
9. Apply all coats with brush or roller, varying slightly the color of succeeding coats. Spraying will not be permitted.
 - a. If recommended by manufacturer, 100% acrylic resin concrete block filler may be spray applied and shall be backrolled as necessary to work material into substrate surface.
10. Brush out or roll on first or prime coat; work well into surface.
11. Each coat shall be inspected, approved and dry before proceeding with additional coats.

12. Allow at least 48 hrs for enamels and exterior oil paint to dry.
13. The surfaces of interior woods and metals shall be sanded or rubbed between coats to assure smooth finish and proper adhesion of subsequent coats.
14. Avoid lapping of paint on glass, hardware, or other adjoining surfaces.
15. Apply no paint to operating units where sliding contact of metals is necessary for proper functioning of unit.
16. Painting is not required on walls or ceilings in concealed and inaccessible areas.
17. Moving parts of operating units will not require finish painting unless otherwise required.
18. Do not paint over any code-required labels, such as Underwriter's Laboratories and Factory Mutual, or any equipment identification, performance rating, name or nomenclature plate.
19. Finish doors on tops, bottoms and side edges same as exterior faces.

3.06 FIELD QUALITY CONTROL

- A. The Consultant reserves the right to require the following material testing procedures at any time, and any number of times during period of field painting:
 1. Measurement of dry film thickness (DFT) by use of a dry film thickness gauge in accordance with use and calibration requirements of Structural Steel Painting Council [SSPC], "Method of Measurement of Dry Paint Thickness with Magnetic Gauges".
 2. Engage services of an independent testing laboratory, recommended by the Consultant, to sample paint being used. Samples of materials delivered to construction site will be taken, identified and sealed, and certified in presence of Contractor
 3. Testing laboratory will perform appropriate tests for any or all of the following characteristics: Abrasion resistance, apparent reflectivity, flexibility, washability, absorption, accelerated weathering, dry opacity, accelerated yellowness, recoating, skinning, color retention, alkali resistance and quantitative materials analysis.
 4. If test results show that material being used does not comply with specified requirements, Contractor shall be directed to stop painting Work, and remove non-complying paint; repaint surfaces coated with rejected paint; remove rejected paint from previously painted surfaces if, upon repainting with specified paint, the two coatings are non-compatible.

- a. If the samples do not comply with requirements of the Specifications, costs of testing and remediation of rejected work shall be borne by Contractor.
- b. If the tests find that the samples do comply with the requirements of the Specifications, the cost of the testing will be borne by the Fund.

3.07 CLEANING

A. General

Contractor shall clean-up behind each paint crew such that painting and clean-up will be a continuous uninterrupted operation. The practice of one general clean-up after completion of all painting will be strictly prohibited. This clean-up will include, but not be limited to the following:

1. Remove spots or defacement resulting from Work of this Section.
2. Retouch all damaged surfaces to leave Work in perfect finished condition.
3. If spots or defacement cannot be satisfactorily removed and retouched, re-finish the surfaces as directed.
4. Within the three foot work area created for removal and painting where existing paint is known or assumed to be lead-based all objects and surfaces shall be thoroughly HEPA vacuumed, wet-cleaned and HEPA vacuumed again. In rooms where the ceiling has been painted all surfaces and objects in the room shall be cleaned in this manner.
5. The contractor shall ensure that the objects and surfaces under protective covering are free of any dust or debris created during painting activities. If necessary, these objects and surfaces shall be wet cleaned and HEPA vacuumed.
6. The contractor shall conduct any cleaning deemed necessary by the independent environmental consultant.
7. Free all operating units of painted materials and leave them clean and in proper working order.
8. Remove from premises all surplus paint materials, debris and any other rubbish resulting from the Work.
9. Leave storage space clean and in condition required for equivalent spaces in project.

3.08 PROTECTION

- A. Provide caution tape and/or locked entryways during paint removal activities in existing buildings to prevent access to the work area from unauthorized personnel.

- B. Provide "Wet Paint" signs to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their Work after completion of painting operations.
- C. At the completion of Work of other trades, touch-up and restore all damaged or defaced painted surfaces as directed by the Consultant.

3.09 DISPOSAL OF PAINTED WASTE AND DEBRIS FROM EXISTING BUILDINGS

A. Testing

Perform Toxicity Characteristic Leaching Procedure (TCLP) testing of all painted waste and debris generated from existing painted objects and surfaces.

B. Storage and Disposal

Storage and disposal shall be in accordance with Specifications Section 01 55 29 and 01 74 19.

END OF SECTION

SECTION 10522
FIRE EXTINGUISHERS AND CABINETS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide fire extinguishers and accessories as indicated on Drawings and as specified herein.
1. Elevator Machine Rooms: Dry Chemical (rated B,C)
- 5 pounds.

1.02 REFERENCES

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work
1. Underwriters Laboratories, Inc. (UL)
2. Intertek/Warnock Hersey
3. American Society for Testing and Materials (ASTM)
4. Uniform Building Code (UBC)

1.03 SUBMITTALS

- A. Product Data:
- Brochure of product, accessories, and installation details. Include rating and classification.
- B. Shop drawings:
1. Location of fire extinguisher by type.
2. Location of fire extinguishers and related "Fire Extinguisher" signs.
- C. Maintenance Data
- For fire extinguishers to include in maintenance manuals.
- D. Warranty as specified in Article 1.07.

1.04 QUALITY ASSURANCE

A. Fire Extinguisher

Bear UL "Listing Mark" for type, rating, and classification of extinguisher indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products as recommended by manufacturer to protect from damage.

1.06 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of portable fire extinguishers that fail in materials or workmanship within six years from date of Substantial Completion.

1. Failures include, but are not limited to, the following:

a. Failure of hydrostatic test according to NFPA 10.

b. Faulty operation of valves or release levers.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. J. L. Industries, Bloomington, MN

B. Larsens Manufacturing Co., Minneapolis, MN

C. Modern Metal Products, Owatonna, MN

D. Potter Roemer, Union, NJ

E. AMEREX Corporation, Trussville, AL 35173

2.02 UNITS

A. Fire Extinguishers

1. Dry Chemical Type (For Class B, C Fires)

a. UL Rating: 10BC: Model: J.L. Industries Galaxy 5, utilizing siliconized sodium bicarbonate base. Nominal Capacity: 5 lbs

- b. UL Rating: 40BC: Model: J.L. Industries Galaxy 5^{1/2}. Nominal capacity 5^{1/2} lbs.

B. Fire extinguisher Bracket

- 1. Brackets: MB 846 for Cosmic 10E; MB 810 for Cosmic 20E, MB 818 for Galaxy; MB 810 for Grenadier; MB 810 for Sentinel.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine walls and partitions for suitable framing depth and blocking where brackets are to be installed.
- B. Extinguishers are intended by design to be in unobstructed locations. Notify the Campus of extinguishers being placed in a potentially obstructed location.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install, at locations indicated on Drawings and in accordance with manufacturer's recommendations. Securely fasten mounting brackets and cabinets to structure, square and plumb.
- B. Prior to installing fire extinguishers in cabinets, examine fire extinguishers for proper charging and tagging. Extinguishers are to be provided fully charged and tagged. Replace damaged, defective, or undercharged units.

3.03 ADJUSTING AND CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as fire-protection specialties are installed, unless otherwise indicated in manufacturer's written installation instructions.
- B. Touch up marred finishes, or replace brackets that cannot be restored to factory finished appearance. Use only materials and procedures recommended or furnished by fire protection bracket manufacturer.

- C. Replace brackets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.
- D. Remove and replace damaged, defective, or undercharged fire-extinguisher units.

END OF SECTION

* * *

LIST OF SUBMITTALS

<u>SUBMITTAL</u>	<u>DATE SUBMITTED</u>	<u>DATE APPROVED</u>
Product Data:	_____	_____
1. Brochure, accessories, and installation details		
Samples:	_____	_____
1. For Initial Selection		
Maintenance Data	_____	_____
Warranty	_____	_____
Shop Drawings:	_____	_____
1. Location of fire extinguishers, fire blankets and cabinets, by type		
2. Location of visible overhead wall-mounted Red and white "Fire Extinguisher" sign.		

* * *

Section 14 00 00**Elevators****PART 1 - GENERAL****1.1 SUMMARY AND DEFINITIONS****A. Related Documents**

1. Division 01 - Supplementary General Conditions
2. Division 09 - Painting
3. 01 78 36 - Warranties

B. Intent

1. This section includes:
 - a. Electric traction passenger
 - b. Hydraulic passenger
2. The following outlines the scope of work covered in this Section:

The modernization of the following elevators:

- a. Smiley Arts Building - One (1) - 2500lbs. capacity traction passenger elevator operating at 150fpm. SAB1.
- b. Haggerty Administration Building: Two (2) - 2500lbs. capacity traction passenger elevator operating at 350fpm. HAB1, HAB2.
- c. Lecture Center: One (1) - 4000lbs. capacity traction service elevator operating at 150fpm. LC1.
- d. Sojourner Truth Library: One (1) - 1200lbs. capacity traction passenger elevator operating at 150fpm. STL1.
- e. Sojourner Truth Library: One (1) - 2000lbs. capacity single stage dual jack holeless hydraulic passenger elevator operating at 100fpm. STL2.
- f. Sojourner Truth Library: One (1) - 2000lbs. capacity single stage dual jack holeless hydraulic passenger elevator operating at 100fpm. STL3.
- g. Student Union Building: One (1) - 4000lbs. capacity traction service elevator operating at 200fpm. SUB3.
- h. Student Union Building: Two (2) - 3000lbs. capacity traction passenger elevator operating at 200fpm. SUB4, SUB5.

The installation of one (1) new elevator in an existing shaft:

- i. Coykenall Science Building: One (1) - 4000lbs. capacity machine room-less traction service elevator operating at 150fpm. CSB1.
3. Related equipment shall be designed, constructed, installed and adjusted to produce the highest results with respect to smooth, quiet, convenient and efficient operation, durability, economy of maintenance, and the highest standard of safety.
4. It is not the intent of these specifications to detail the construction and design of all parts of the equipment, but it is expected that the type, materials, design, quality of work and

- construction of each part shall be adequate for the service required, durable, properly coordinated with all other parts, and in accordance with the best commercial standards applicable and of the highest commercial efficiency possible.
5. Electric and magnetic circuits and related parts shall be of proper size, design and material to avoid heating and arcing, and all other objectionable effects which may reduce the efficiency of operation, economy of maintenance and/or net-useful life of the apparatus.
 6. Minimum requirements for design, materials, etc., are for certain parts of the equipment. Equivalent requirements approved by the Consultant shall apply to such parts as are of special design, construction or material and to which the specified requirements are not directly applicable. These minimum requirements as a whole shall be considered as establishing proportionate general minimum standards for all parts of the equipment.
 7. The Consultant may permit variations from the requirement of these specifications to permit use of the Contractor's standard equipment, provided such standard equipment is in every way adequate for the intended use and meets the full intent of these specifications. All such variations proposed by the manufacturer shall be called to the attention of the Consultant.
 8. General requirements for design, materials and construction are intended primarily to apply to the heavy-duty and important parts of the equipment specifically mentioned and to other parts of similar duty and importance. Less important and light-duty parts may be of the standard design, materials and construction provided that, in the opinion of the Consultant, such standards are in accordance with the best commercial practice and are fully adequate for the purpose of use. All such variations shall be made only on the Consultant's written approval.
 9. All equipment and component parts installed, supplied or provided under this contract shall be manufactured and distributed by a third-party, non-installer company servicing the vertical transportation industry.
 - a. Apparatus shall conform to the design and construction standards referenced herein, and shall be rated the best commercial grade suitable for this application.
 - b. Equipment and component systems shall not employ any experimental devices or proprietary designs that could hamper and/or otherwise prohibit subsequent maintenance repairs or adjustments by all qualified contractors.
 - c. Manufacturers of the apparatus shall provide technical support and parts replacements for their equipment and component systems for a minimum of twenty (20) years, and issue such guarantee of support to the purchaser with written certification naming the final Owner of their product(s) to ensure the apparatus or systems remain maintainable regardless of who may be selected for future service.
 10. All equipment provided shall be factory and field tested with a history of design reliability and net-useful life established.
 - a. Contractor must be able to demonstrate the apparatus to be installed has been used successfully in, at minimum, three (3) similar projects, under comparable conditions.
 - b. If the apparatus proposed differs substantially in construction, material composition, design, size, capacity, duty or other such rating from the equipment previously used for the same purpose by the manufacturer, the Consultant may reject the apparatus or require the vendor test and demonstrate the adequacy and suitability for this particular situation. Any necessary tests shall be performed at the sole expense of the Contractor with no prior guarantee of acceptance after the testing procedure.

11. The Contractor shall not use as part of the permanent equipment any experimental devices, proprietary design, components, construction of materials which have not been fully tried out in at least substantially similar or under comparable service, except as may be especially approved by the Consultant. If any important equipment or devices to be used on this installation differ substantially in construction, materials, design, size, capacity or duty from corresponding items previously used for the same purpose by the manufacturer, they shall pass such tests as the Consultant may require to fully show their adequacy and suitability. These tests shall be in addition to tests herein specified and shall be made at the expense of the Contractor.
12. Certain design limitations, tests, etc., are herein specified as a partial check of the adequacy of design, construction and materials used. These requirements do not cover all features necessary to ensure satisfactory and approved operation, etc., of the equipment.
13. It is understood, the entire system shall be designed, fabricated, modified and/or upgraded in full compliance with applicable laws and code standards. The absence of a particular item or requirement shall not relieve the Contractor of the full and sole responsibility for such equipment, features and/or procedures.
14. With the exception of only those items specifically identified as being performed by installers, the Specifications are intended to include all engineering, material, labor, testing, and inspections needed to achieve work specified by the Contract Documents. Inasmuch as it is understood that any incidental work necessary to complete the project is also covered by the Specifications, bidders are cautioned to familiarize themselves with the existing job site conditions. Additional charges for material or labor shall not be permitted subsequent to execution of the Contract.
15. Bidders must report discrepancies or ambiguities occurring in the Specifications to the Consultant for resolution prior to the bidding deadline.
16. Pre-Modernization Inspection and Repair Requirements
 - a. Within 30 days of the Notice to Proceed, Contractor and vda® will perform a joint inspection of all equipment for the purpose of determining the need for repairs. Subsequently, the Contractor shall submit a detailed schedule of the required repairs and commence work upon award. Repairs shall be completed prior to the commencement of the modernization work.

C. Abbreviations and Symbols

1. The following abbreviations, Associations, Institutions, and Societies may appear in the Project Manual or Contract Documents:

ADA	Americans with Disabilities Act
AHJ	Authority Having Jurisdiction
AIA	American Institute of Architects
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society

IBC	International Building Code
IEEE	Institute of Electrical and Electronics Engineers
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Agency
OSHA	Occupational Safety and Health Act

D. Codes and Ordinances / Regulatory Agencies

1. Work specified by the Contract Documents shall be performed in compliance with applicable Federal, State, and municipal codes and ordinances in effect at the time of Contract execution. Regulations of the Authority Having Jurisdiction shall be fulfilled by the Contractor and Subcontractors. The entire installation, when completed, shall conform with all applicable regulations set forth in the latest editions of:
 - a. Local and/or State laws applicable for logistical area of project work.
 - b. 2020 Building Code of New York State.
 - c. ASME/A17.1-2016/CSA B44-16: Safety Code for Elevators and Escalators
 - d. NFPA 13-16: Standard for Installation of Sprinkler systems
 - e. NFPA 70-17: National Electrical Code
 - f. NFPA 72-16: National Fire Alarm and Signaling Code
 - g. American with Disabilities Act - Accessibility Guidelines for Building and Facilities and/or A117.1 Accessibility
 - h. ECC (Energy Conservation Code).
2. The Contractor shall advise the Owner's Representative of pending code changes that could be applicable to this project and provide quotations for compliance with related costs.

E. Reference Standards

1. AISC - Specification for the Design, Fabrication and Erection of Structural Steel for Buildings
2. ANSI/AWS D1.1 - Structural Welding Code, Steel
3. ANSI/NFPA 80 - Fire Doors and Windows
4. ANSI/UL 10B - Fire Tests of Door Assemblies
5. ASTM D1785 - PVC Pipe
6. ASTM D2466 - PVC Pipe Fittings
7. ASTM D2564 - Cement for PVC Pipe and Fittings
8. ANSI/IEEE - 519-Latest Edition
9. ANSI/IEEE - Guide for Surge Withstand Capability (SWC) Tests
10. ANSI Z97.1 - Laminated/Safety Tempered Glass

F. Definitions

1. Defective Work: Operation or control system failure, including excessive malfunctions; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.

2. Provide: Where used in this document, provide shall mean to install new device, apparatus, system, equipment or feature as specified in this document.
3. Definitions in ASME A17.1 as amended or modified by the AHJ apply to work of this Section.

1.2 PERMITS AND SUBMITTALS

A. Submittals

1. Prior to beginning the work, the Contractor shall submit and have approved copies of layout drawings, shop drawings and standard cuts. These items shall include:
 - a. A plan view of the hoistway and machine room
 - b. Elevation of the pit
 - c. All accessories.
2. The Consultant and the Owner's Representative shall pass on the submittals with reasonable promptness and the Contractor shall be responsible to ensure that there will be no delay in their work or that of any other trade involved.
3. Approved filing and submittal requirements must be completed before equipment and related materials are ordered.
4. Samples of wood, metal, plastic, paint or other architectural finish material applicable to this project shall be submitted for approval by the Owner's designee.
5. It shall be understood that approval of the drawings and cuts by Owner's designee, Architect and/or Consultant shall be for general arrangement only and does not include measurements which are the Contractor's responsibility.
6. The Contractor shall prepare a record log and maintain all submittals, shop drawings, catalog cuts and samples.

B. Measurements and Drawings

1. Drawings or measurements included with the bidding material shall be for the convenience of the bidders only and full responsibility for detailed dimensions lies with the Contractor.
2. In the execution of the work on the job, the Contractor shall verify all dimensions with the actual conditions.
3. Where the work of the Elevator is to join other trades, the shop drawings shall show the actual dimensions and the method of joining the work of the various trades.

C. Keys

1. Upon the initial acceptance of work specified by the Contract Documents on each unit, the Contractor shall deliver to the Owner, six (6) keys for each general key-operated device that is provided under these specifications in accordance with ASME A17.1, Part 8 standards as may be adopted and modified by the AHJ.
2. All other keying of access or operation of equipment shall be provided in accordance with ASME A17.1 Part 8 as may be adopted and modified by the AHJ.

D. Diagnostic Tools

1. Prior to seeking final acceptance of the project, the Contractor shall deliver to the Owner any specialized tools required to perform diagnostic evaluations, adjustments, and/or programming changes on any microprocessor-based control equipment installed by the Contractor. All such tools shall become the property of the Owner.
 - a. Owner's diagnostic tools shall be configured to perform all levels of diagnostics, systems adjustment and software program changes which are available to the Contractor.
 - b. Owner's diagnostic tools that require periodic re-calibration and/or re-initiation shall be performed by the Contractor at no additional cost to the Owner for a period equal to the term of the maintenance agreement from the date of final acceptance of the project.
 - c. The Contractor shall provide a temporary replacement, at no additional cost to the Owner, during those intervals in which the Owner might find it necessary to surrender a diagnostic tool for re-calibration, re-initiation or repair.
2. Contractor shall deliver to the Owner, printed instructions, access codes, passwords or other proprietary information necessary to interface with the microprocessor-control equipment.

E. Service Support Requirements / Spare Parts

1. Printed Circuit Boards, Software Programs and Spare Parts
 - a. Prior to seeking final acceptance of the project as specified by the Contract Documents, the Contractor shall deliver to the Owner a spare replacement for each printed circuit board that is needed to fully operate any one (1) of the following:
 - 1) Elevator and the group dispatch/supervisory controller where applicable:
 - a) Circuit boards shall be exact duplicates of those in use and shall be provided with "as installed" software programs.
 - b) Circuit boards shall be "run in" on the job site to demonstrate its ability to function in a normal manner.
 - c) All spare printed circuit boards shall become property of the Owner.
2. Software / Firmware Updates
 - a. During the life of the equipment and subject to the term of the maintenance agreement, where revisions to firmware and/or software are issued by the control manufacturer or manufacturer of solid state and microprocessor based subsystems subsequent to the beneficial use of the equipment, updates shall be provided so that the installation and spare circuit boards are current with respect to software and firmware versions.
3. Spare Parts
 - a. Provide spare parts required for maintenance of the elevator equipment installed under this contract.

- 1) The spare parts shall be placed in new storage cabinets, located in the machine room, and become the property of the Owner.
- 2) Upon expiration of the contract, a complete set of spare parts as described below shall be turned over to the Owner and a receipt obtained.
- 3) The following is the absolute minimum requirement:
 - a) Four (4) fuses of each size.
 - b) Two (2) complete set of controller resistor of each size.
 - c) One (1) complete hall call station of each type.
 - d) One (1) complete hall lantern of each type.
 - e) One (1) complete set of door protective device of each size.
 - f) One (1) door lock of each type.
 - g) Two (2) car door and two hall door sheaves of each type.
 - h) Four (4) sets of door gibs for car and hall doors of each type.
 - i) One (1) complete door closer of each type.
 - j) Four (4) hall call button assemblies.
 - k) Four (4) car call button assemblies.
 - l) Two (2) hall position indicator of each type.
 - m) Two (2) car position indicators of each type.
 - n) One (1) complete door operator of each type.
 - o) One (1) complete set of car and counterweight guide rollers where applicable.
 - p) Power supply of each size.
 - q) One (1) set of controller I/O boards.

F. Wiring Diagrams, Operating Manuals and Maintenance Data

1. Comply with the requirements of Division 01.
2. Deliver to the Owner, four (4) identical volumes of printed information organized into neatly bound manuals prior to seeking final acceptance of the project.
3. The manuals shall also be submitted in electronic format on non-volatile media, incorporating raw 'CAD' and/or Acrobat 'PDF' file formats.
4. Manuals, as well as electronic copies, shall contain the following:
 - a. Step-by-step adjusting, programming and troubleshooting procedures that pertain to the solid-state microprocessor-control and motor drive equipment.
 - b. Passwords or identification codes required to gain access to each software program in order to perform diagnostics or program changes.
 - c. A composite listing of the individual settings chosen for variable software parameters stored in the software programs of both the motion and dispatch controllers.
 - d. Method of control and operation.
5. Provide four (4) sets of "AS INSTALLED" straight-line wiring diagrams in both hard and electronic format in accordance with the following requirements:
 - a. Displaying name and symbol of each relay, switch or other electrical component utilized including identification of each wiring terminal.
 - b. Electrical circuits depicted shall include all those which are hard wired in both the machine room and hoistway.

- c. Supplemental wiring changes performed in the field shall be incorporated into the diagrams in order to accurately replicate the completed installation.
- 6. Furnish four (4) bound instructions and recommendations for maintenance, with special reference to lubrication and lubricants.
- 7. Manuals or photographs showing controller repair parts with part numbers listed.

G. Training

- 1. Prior to seeking final acceptance of the project, the Contractor shall conduct an eight-hour training program on-site with building personnel selected by the Owner.
- 2. The focus of the session shall include:
 - a. Instructions on proper safety procedures and who to contact for the purpose of assisting passengers that may become entrapped inside an elevator car.
 - b. Explain each control feature and its correct sequence of operation.
- 3. Control features covered shall include but, not be limited to:
 - a. Independent Service Operation.
 - b. Attendant Service Operation.
 - c. Emergency Fire Recall Operation - Phase I
 - d. Emergency In-car Operation - Phase II.
 - e. Emergency Power Operation.
 - f. Emergency Communications Equipment.
 - g. Hospital Emergency Service.
 - h. Security Operating Features.
 - i. Interactive Systems Management.
 - j. Remote Monitoring/Controls.
 - k. Emergency Hoistway Access and Rescue Features. – CSB1

H. Patents

- 1. Patent licenses which may be required to perform work specified by the Contract Documents shall be obtained by the Contractor at its own expense.
- 2. The Contractor agrees to defend and save harmless the Owner, Consultant and agents, servants, and employees thereof from any liability resulting from the manufacture or use of any patented invention, process or article of appliance in performing work specified in the Contract Documents.

I. Advertising

- 1. Advertising privileges shall be retained by the Owner.
- 2. It shall be the responsibility of the Contractor to keep the job site free of posters, signs, and/or decorations.
- 3. Contractor's logo shall not appear on faceplates or entrance sills without the approval of the Owner.

1.3 QUALITY ASSURANCE

A. Materials and Quality of Work

1. All materials are to be new and of the best quality of the kind specified.
2. Installation of such materials shall be accomplished in a neat manner and be of the highest quality.
 - a. Should the Contractor receive written notification from the Owner stating the presence of inferior, improper, or unsound materials or quality of installation, the Contractor shall, within twenty-four (24) hours, remove such work or materials and make good all other work or materials damaged.
 - b. Should the Owner permit said work or materials to remain, the Owner shall be allowed the difference in value or shall, at its election, have the right to have said work or materials repaired or replaced as well as the damage caused thereby, at the expense of the Contractor, at any time within one (1) year after the completion of the work; and neither payment made to the Contractor, nor any other acts of the Owner shall be construed as evidence of acceptance and waiver.

B. Mechanical Design Requirements (General)

1. The following typical requirements shall apply to all parts of the work where applicable and are supplementary to other requirements noted under the respective headings.
 - a. All bearings, pivots, guides, guide shoes, gearing, door hanger sheaves, door hanger tracks and similar elements subject to friction or rolling wear in the entire elevator installation shall be accurately and smoothly finished and shall be arranged and equipped for adequate and convenient lubrication. Means shall be provided for flushing and draining the larger bearings and gear case. All oiling holes shall have dustproof, self-cleaning caps.
 - b. Bearings of governor and governor sheaves and important supporting bearings of other parts in motion when the elevator is traveling shall, unless otherwise specified or approved, be of ball or roller bearing type.
 - c. Bearings for brake levers and similar uses where the amount of movement under load is light and the wear negligible may be unlined.
 - d. All plain bearings shall be liberally sized in accordance with the best commercial elevator usages which have proved entirely satisfactory on heavy-duty installations.
 - e. Bearings of motors shall be arranged and equipped for adequate automatic lubrication. Ring or chain oilers, spring-fed grease cups and equivalent devices properly used in accordance with the best commercial elevator practice will be acceptable. Approved means shall be provided for visibly checking the amount of lubricant contained and for flushing and draining. Means shall also be provided for preventing leakage of lubricant when the reservoirs or grease cups are filled to proper levels.
 - f. Ball and roller bearings shall be of liberal size and of a type and make which have been extensively and successfully used on other similar, heavy-duty elevator installations. They shall be fully enclosed. Loading, lubrication, support and all other conditions of use shall be in accordance with the recommendations of the bearing manufacturer based on previous extensive and satisfactory elevator usage.
 - g. All armature spiders and similar items intended to rotate with their shafts shall be keyed and/or firm press or shrunk fit on the shafts. Set screw fastening will be

- permitted only for minor items not subject to hoisting loads and where means for field adjustment is required.
- h. All bolts used to connect moving parts, bolts carrying hoisting stresses and all other bolts, except guide rail bolts, subject to vibration or shock shall be fitted with adequate means to prevent loosening of the nuts and bolts. Bolts transmitting important shearing stresses between machine parts shall have tight body fit in drilling holes.
 - i. All machine work, assembling and installing shall be done by skilled and experienced mechanics using first-class, modern equipment and tools. All work shall be thoroughly high grade in every respect. All parts will be manufactured to high precision standards so that wearing parts will be readily interchangeable with stock repair parts with a minimum of field fitting.
 - j. All bearing and sliding surfaces of shafts, pins, bearings, bushings, guides, etc., shall be smoothly and accurately finished. They shall be assembled and installed in accurate alignment and with working clearance most suitable for the load, speed, lubrication and other conditions of use.
 - k. Structural steel used for supporting and securing equipment and for the construction of car slings, etc., shall conform to the A.S.T.M. specification for Structural Steel for Buildings. Design stresses shall not exceed those specified in the local Building Code.
 - l. Castings of motor frames, sheaves, gear casings, etc., shall be of the best quality metallurgically controlled, hard, close grained gray machinery cast iron, free from blow holes, sand holes, or shrinkage cracks, ground to remove overruns, sanded and machined so as to leave a finish suitable for its particular application. Surfaces of sheaves and brake drums shall be entirely free from defects and shall show a hardness of not less than 220 Brinell.

C. Electrical Design Requirements (General)

- 1. The following typical requirements shall apply to all parts of the work and are supplementary to other requirements noted under the respective headings.
 - a. The design and construction of the motors shall conform to the requirements of these specifications and to the ASME Standards for Rotating Electrical Machinery with revisions issued to the first day when the work of this Contract was advertised.
 - 1) Motors shall operate successfully under all loads and speeds and during acceleration and deceleration.
 - 2) Motors shall be designed for quiet operation without excessive heat.
 - 3) Insulation on motor coils and windings and on all insulated switch, relay, brake and other coils shall conform to the requirements of minimum Class "F" insulation, as defined in ANSI Standards for Rotating Electrical Machinery. All motors shall be impregnated twice.
 - 4) Switches, relays, etc., on controller, starter and signal panels and similar items on other parts of the equipment shall be the latest improved type for the condition of use. They shall function properly in full accordance with the requirements of the machines controlled and with the specified operating requirements of the elevator. Any of these parts showing wear or other injurious effects during the guarantee period to the extent that abnormal maintenance is required or indicated shall be replaced with proper and adequate parts by the Contractor.

- 5) Contacts in elevator motor circuits which are intended to be opened by governors or other safety devices shall be copper to carbon or other approved non-fusing type.
- 6) Where required, controllers and other component parts of the installation shall be labeled in accordance with the latest codes and standards as adopted and/or otherwise modified by the AHJ.
- 7) Electrical equipment, motors, controllers, etc., installed under this contract shall have necessary CSA/US or UL/US listing as may be required by the AHJ. Equipment shall be labeled or tagged accordingly.

D. Energy Conservation Code

1. The Contractor shall comply with the requirements set forth in the Energy Conservation Code as may be applicable to the AHJ.
2. Except for equipment or systems under the purview of other disciplines, elevator and escalator equipment provided by the Contractor requiring compliance shall include, but not be limited to:
 - a. Gear ratio efficiencies in geared machines
 - b. Energy efficiencies of geared and gearless motors
 - c. Absorption of regenerated power for elevators and escalators
 - d. Variable speed operation of escalators
 - e. Energy efficiencies of car interior lighting and ventilation
 - f. Automatic operation of car interior lighting and ventilation through the individual car controller

E. Materials, Painting and Finishes

1. Exposed ferrous metal surfaces in the pit that do not have a galvanized, anodized, baked enamel, or special architectural finishes, shall be finished per Division 9 requirements.
2. The machinery located within the machine room and secondary level (where applicable) as well as to the machine room floors, shall be finished per Division 9 requirements.
3. Architectural metal surfaces of bronze or similar non-ferrous materials which are specified to be refinished, re clad and/or provided new, shall be sufficiently clear coated so as to resist tarnishing during normal usage for a period of not less than twelve (12) months after final acceptance by the Owner.
4. Identify all equipment including buffers, crosshead, safety plank, machine, controller, drive, governor, disconnect switch, etc., by 4" high numerals which shall contrast with the background to which it is applied. The identification shall be either decalomania or stencil type.
5. Paint or provide decal-type floor designation not less than six (6) inches high on hoistway doors (hoistway side), fascias and/or walls as required by Code at intervals not exceeding 7'-0". The color of paint used shall contrast with the color of the surface to which it is applied.

F. Accessibility Requirements

1. Locate door reopening devices at 5" and 29" above the finish floor when individual contact projection apparatus is employed.

2. Locate the alarm button and emergency stop switch at 35", and floor and control buttons not more than 48" above the finished floor. The alarm button shall illuminate when pressed for visual acknowledgement to user.
3. Provide raised markings in the panel to the left of the car call and other control buttons. Letters and numbers shall be a minimum of 5/8" and raised .03" and shall be in contrasting color to the call buttons and cover plate.
4. The centerline of new hall push button shall be 42" above the finished floor.
5. The hall arrival lanterns or cab direction lantern provided shall sound once for the "up" direction and twice for the "down" direction. Design and locate fixtures per Federal standards.
6. Provide floor designations at each entrance on both sides of jamb at a height of 60" above the floor.
 - a. Use cast metal plates and polished numbers secured with tamper-proof hardware.
 - b. Designations shall be 2" high, raised .03" on a contrasting color background as selected by the Owner.
7. Provide an audible signal within the elevator to tell passenger that the car is stopping or passing a floor served by the elevator.
8. Where elevators operate at a speed greater than 200 fpm, provide a verbal annunciator to announce the floor at which the elevator is stopping where required by the AHJ.
9. Provide signal control timing for passenger entry/exit transitions per Federal and/or Local standards.
10. Ensure sill-to-sill running clearances do not exceed 1-1/4" at all landings served.
11. Provide visual call acknowledgment signal for car emergency intercommunication device.

1.4 DELIVERY / STORAGE / HANDLING / COORDINATION

A. Delivery and Storage of Material and Tools

1. Comply with the requirements of Division 01.
2. Delivery, Storage and Handling:
 - a. Deliver materials to the site ready for use in the accepted manufacturer's original and unopened containers and packaging, bearing labels as to type of material, brand name and manufacturer's name. Delivered materials shall be identical to accepted samples.
 - b. Store materials under cover in a dry and clean location, off the ground.
 - c. Remove delivered materials which are damaged or otherwise not suitable for installation from the job site and replace with acceptable materials.
3. The Owner shall bear no responsibility for the materials, equipment or tools of the Contractor and shall not be liable for any loss thereof or damage thereto.
4. The Contractor shall confine storage of materials on the job site to the limits and locations designated by the Owner and shall not unnecessarily encumber the premises or overload any portion with materials to a greater extent than the structural design load of the Facility.

B. Work with Other Trades / Coordination

1. Coordinate installation of sleeves, block outs, equipment with integral anchors, and other items that are embedded in concrete or masonry for the applicable equipment. Furnish templates, sleeves, equipment with integral anchors, and installation instructions and deliver to Project site in time for installation.
2. Coordinate sequence of installation with other work to avoid delaying the Work.
3. Coordinate locations and dimensions of other work relating to the equipment scheduled for installation including pit ladders, sumps, and floor drains in pits; entrance subsills; machine beams; and electrical service, electrical outlets, lights, and switches in pits and machine rooms, secondary levels, overhead sheave rooms and hoistways as it relates to the specific equipment.

C. Removal of Rubbish and Existing Equipment

1. On a scheduled basis, the Contractor shall remove all rubbish generated in performing work specified in the Contract Documents from the job site.
2. Any component of the existing elevator plant that is not reused under the scope of work specified in the Contract Documents shall become property of the Contractor and, as such, shall be removed from the premises at the Contractor's sole expense.
3. The Contractor agrees to dispose of the aforementioned equipment and rubbish in accordance with any and all applicable Federal, State, and municipal environmental regulations, and further accepts all liability that may result from handling and/or disposing of said material.

D. Protection of Work and Property

1. The Contractor shall continuously maintain adequate protection of all their work from damage and shall protect the Owner's property from injury or loss arising out of this contract.
2. The Contractor shall make good any such damages, injury or loss, except such as may be directly caused by agents or employees of the Owner.
3. The Contractor shall provide all barricades required to protect open hoistways or shafts per OSHA regulations. Such protection shall include any necessary guards or other barricades for employee protections during and after the modernization procedure.

1.5 RELATED WORK

A. Work by Other Trades

1. The following requirements shall be applicable based on prevailing conditions at the site of work and/or mandated modifications for code compliance.
 - a. Installation of new main line power feed with related disconnect switch designed and located per local law requirements.
 - b. Installation of new fully enclosed, externally operated, fused (or circuit breaker), main line and/or auxiliary disconnect switch(es), properly located in accordance with local law that can be locked in the open (off) position.
 - c. Provide remote/auxiliary disconnects where new (either by the Elevator or by others) or existing disconnect switches are not in line-of-sight of the controller.
 - d. Installation of new electrical conduit and power feeders between the load side of existing and new main line disconnect switches and new elevator control equipment.

- e. Provide hoist rope guards at the car and counterweight drop side of the hoisting machine sheave to prevent accidental contact with the hoisting ropes. The guard shall extend from the point where the hoisting ropes penetrate the machine room floor slab to a point beyond where the ropes contact the traction and deflector sheaves. The guards shall be constructed so as to conceal pinch-points between ropes and sheave grooves.
- f. The top surface of any setback or projection in the hoistway that measures 2" or more in width shall be beveled at an angle of not less than 75 degrees from horizontal. Each bevel plate shall be constructed from prime painted 14 gauge cold-rolled steel and installed so as to conform with ASME A17.1 elevator safety code as modified by, and/or in addition to codes and standards accepted by the AHJ.
- g. Provide each machine room, secondary space and pit with a self-closing, self-locking access door. Locking means shall be spring-type arranged to permit the doors to be opened from the inside without a key.
- h. Installation of new permanent lighting fixtures with protective guards and 110-volt duplex GFI receptacles inside the machine room. Illumination shall be no less than 30 foot-candles at floor level. A light control switch shall be provided immediately adjacent to the machine room entrance door. Provide necessary receptacles as required to supply power to auxiliary elevator equipment and/or remotely located monitors.
- i. Provide machinery spaces of the secondary level directly below the machine room with permanent lighting fixtures fitted with protective guards and a duplex GFI receptacle. Illumination shall be no less than 19 foot-candles at floor level. A light control switch must be provided immediately adjacent to the secondary level entrance door/ladder in accordance with code.
- j. Provide each elevator pit with a 110 volt GFI duplex receptacle and a permanent lighting fixture equipped with protective guard. Illumination shall be no less than 10 foot-candles at pit floor level. A light control switch must be provided and so positioned as to be readily accessible from the pit entrance door or ladder.

B. Work by Elevator Trade

- 1. The following requirements shall be applicable based on prevailing conditions at the site of work and/or mandated modifications for code compliance.
 - a. Provide the following signage, plates and tags:
 - 1) Provide each walk-in pit entrance door with a sign reading "Danger Elevator Pit" or the equivalent thereof. Letters shall be not less than 2" high.
 - 2) In addition to (1) above, walk-in pits with pit door stop switches shall be provided with a sign that reads "WARNING – Opening the Pit Door Will Stop the Elevator".
 - 3) Provide access doors to each electrical control room, secondary or machinery space with signs that read "ELEVATOR MACHINE ROOM". Letters shall be not less than 2" high.
 - 4) Provide all required manufacturer data plates and installation-specific tags and signs of the types and styles containing information as required by applicable Codes and Standards as adopted and/or modified by the AHJ.
 - b. Where the pit extends more than 3 feet below the sill of the pit access door, provide a permanent fixed metal ladder.

- 1) Ladder shall extend no less than 48" above the sill of the access door. Handgrips shall extend from the ladder to a point no less than 48" above the sill of the access door where the ladder does not comply.
 - 2) The rungs shall be a minimum of 16" wide. Where prevailing conditions prevent a 16" wide rung, the rung may be reduced to no less than 9".
 - 3) The rungs shall be spaced 12" on center.
 - 4) A clear distance of no less than 4 ½" from the centerline of the rungs and handgrips to the nearest permanent object in back of the ladder shall be provided.
 - a) Where prevailing conditions prohibit the installation of the required ladder as specified above, the Elevator Trade shall coordinate requirements necessary for compliance with the Consultant.
- c. Provide a standard railing conforming to Code on the outside perimeter of the car top on all sides where the perpendicular distance between the edges of the car top and the adjacent hoistway enclosure exceeds 300 mm (12 in.) horizontal clearance.
 - d. Provide necessary patching, repairing and installation of masonry and/or dry wall for smooth and code compliant elevator hoistways.
 - e. Provide any required repair of smoke holes with subway grating covers in the machine rooms and/or secondary levels where applicable. All smoke ventilation provisions, including duct work, dampers, fans, fire control interfaces, in accordance with local codes, shall be reviewed for proper operation.
 - f. Subsequent to the contract execution, the Contractor shall perform the following procedures and engineering tasks relative to balance loading of system and cab work included under base specification requirements and alternative/optional upgrades:
 - 1) Perform balance load testing to determine existing conditions and requirements applicable to new/modified equipment.
 - 2) Provide data for Consultant and/or their agents to evaluate any limitations that may be placed on design/finish options due to prevailing conditions or total suspended loading.

1.6 WARRANTY / MAINTENANCE SERVICES

A. Contract Close-Out, Guarantee and Warranties

1. The Contractor agrees to certify that work performed in accordance with the Contract Documents shall remain free of defects in materials and quality of work for a period of one (1) year after final acceptance of the completed project.
2. The sole duty of the Contractor under this warranty is to correct any non-conformance or defect and all damages caused by such defect without any additional cost to the Owner and within fifteen (15) days of notification.
3. The express warranty contained herein is in lieu of all other warranties, express or implied, including any warranty of merchantability or fitness for a particular purpose.
4. In the event the Contractor fails to fulfill its obligations defined herein, the Owner shall have the express right to perform the Contractor's obligations and to charge the Contractor the cost of such performance or deduct an equal amount from any monies due the Contractor.

B. Maintenance Coverage

1. The following maintenance coverage apply:

a. Interim Maintenance

- 1) Interim full comprehensive maintenance services shall be provided.
- 2) Costs related to interim maintenance shall be included in the base bid.

b. Guarantee Maintenance

- 1) Provide full comprehensive preventative maintenance services for a period of Twelve (12) months after the final completion and acceptance of the project.
- 2) Guarantee maintenance and related services shall be provided in accordance with the Contractor's Form of Protective Maintenance Services submitted with the bid as further specified.
- 3) Costs related to guarantee maintenance shall be included in the base bid quotation.

PART 2 - PRODUCTS

2.1 GENERAL DESCRIPTION

2.2 ELEVATORS

A. Elevator – CSB1

1.	Quantity	One (1)
2.	Type	Service machine room-less traction
3.	Capacity (lbs.)	4000
4.	Speed (fpm)	150
5.	Travel in Feet	36'-0"
6.	Number of Landings	Four (4)
7.	Number of Openings	Four (4)
8.	Front Opening	All @ B, 1-3
9.	Rear Opening	None
10.	Operation	Simplex Selective Collective
11.	Control	Variable voltage variable frequency
12.	Fireman's Control	Phase I & II

13.	Number of Push Button Risers	One (1)
14.	Platform Size	6'-0" wide x 8'-4.5" deep
15.	Guide Rails	15# Steel tees, provide rail backing as required
16.	Buffers	Oil
17.	Cab	As further specified
18.	Entrance Size	48" wide x 84" high
19.	Door Operation	Two Speed Side Opening
20.	Machine Type	Gearless
21.	Machine Location	In Hoistway Overhead
22.	Counterweight Safety	Not Required
23.	Power Supply	208 – 3 - 60

B. Elevator – SAB1

1.	Quantity	One (1)
2.	Type	Passenger traction
3.	Capacity (lbs.)	2500
4.	Speed (fpm)	150
5.	Travel in Feet	24'-0"
6.	Number of Landings	Three (3)
7.	Number of Openings	Three (3)
8.	Front Opening	All @ B, 1-2
9.	Rear Opening	None
10.	Operation	Simplex Selective Collective
11.	Control	Variable voltage variable frequency
12.	Fireman's Control	Phase I & II
13.	Number of Push Button Risers	One (1)
14.	Platform Size	7'-0" wide x 5'-3.5" deep
15.	Guide Rails	15# Steel tees, provide rail backing as required

16.	Buffers	Oil
17.	Cab	As further specified
18.	Entrance Size	54" wide x 84" high
19.	Door Operation	Two Speed Side Opening
20.	Machine Type	Gearless
21.	Machine Location	Overhead
22.	Counterweight Safety	Not Required
23.	Power Supply	208 – 3 - 60

C. Elevator – HAB1-HAB2

1.	Quantity	Two (2)
2.	Type	Passenger traction
3.	Capacity (lbs.)	2500
4.	Speed (fpm)	350
5.	Travel in Feet	108'-0"
6.	Number of Landings	Ten (10)
7.	Number of Openings	Ten (10)
8.	Front Opening	10@ B, 1-9
9.	Rear Opening	None
10.	Operation	Duplex Selective Collective
11.	Control	Variable voltage variable frequency
12.	Fireman's Control	Phase I & II
13.	Number of Push Button Risers	One (1)
14.	Platform Size	6'-6" wide x 5'-2" deep
15.	Guide Rails	15# Steel tees, provide rail backing as required
16.	Buffers	Oil
17.	Cab	As further specified
18.	Entrance Size	36" wide x 84" high
19.	Door Operation	Single Speed Side Opening

20.	Machine Type	Gearless
21.	Machine Location	Overhead
22.	Counterweight Safety	Not Required
23.	Power Supply	480 – 3 - 60

D. Elevator – LC1

1.	Quantity	One (1)
2.	Type	Service traction
3.	Capacity (lbs.)	4000
4.	Speed (fpm)	150
5.	Travel in Feet	48'-0"
6.	Number of Landings	Five (5)
7.	Number of Openings	Five (5)
8.	Front Opening	2@ B-G
9.	Rear Opening	3@ M-P
10.	Operation	Simplex Selective Collective
11.	Control	Variable voltage variable frequency
12.	Fireman's Control	Phase I & II
13.	Number of Push Button Risers	Two (2)
14.	Platform Size	6'-0" wide x 8'-5" deep
15.	Guide Rails	15# Steel tees, provide rail backing as required
16.	Buffers	Oil
17.	Cab	As further specified
18.	Entrance Size	Front: 48" wide x 84" high Rear: 48" wide x 84" high
19.	Door Operation	Front: Two Speed Side Opening Rear: Two Speed Side Opening
20.	Machine Type	Gearless
21.	Machine Location	Overhead

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|-----|----------------------|--------------|
| 22. | Counterweight Safety | Not Required |
| 23. | Power Supply | 480 – 3 - 60 |

E. Elevator – STL1

- | | | |
|-----|------------------------------|--|
| 1. | Quantity | One (1) |
| 2. | Type | Passenger traction |
| 3. | Capacity (lbs.) | 1200 |
| 4. | Speed (fpm) | 150 |
| 5. | Travel in Feet | 24'-0" |
| 6. | Number of Landings | Three (3) |
| 7. | Number of Openings | Three (3) |
| 8. | Front Opening | 3 @ B, 1-2 |
| 9. | Rear Opening | None |
| 10. | Operation | Simplex Selective Collective |
| 11. | Control | Variable voltage variable frequency |
| 12. | Fireman's Control | Phase I & II |
| 13. | Number of Push Button Risers | One (1) |
| 14. | Platform Size | 5'-10" wide x 3'-11.5" deep |
| 15. | Guide Rails | 15# Steel tees, provide rail backing as required |
| 16. | Buffers | Oil |
| 17. | Cab | As further specified |
| 18. | Entrance Size | 48" wide x 84" high |
| 19. | Door Operation | Two Speed Side Opening |
| 20. | Machine Type | Gearless |
| 21. | Machine Location | Overhead |
| 22. | Counterweight Safety | Not Required |
| 23. | Power Supply | 480 – 3 - 60 |

F. Elevator – STL2

1.	Quantity	One (1)
2.	Type	Passenger single stage dual jack holeless hydraulic
3.	Capacity (lbs.)	2000
4.	Speed (fpm)	100
5.	Travel in Feet	12'-0"
6.	Number of Landings	Two (2)
7.	Number of Openings	Two (2)
8.	Front Opening	2@ B-2
9.	Rear Opening	None
10.	Operation	Two Stop Operation
11.	Control	AC for Hydraulics
12.	Fireman's Control	Phase I & II
13.	Number of Push Button Risers	One (1)
14.	Platform Size	6'-0" wide x 5'-2" deep
15.	Guide Rails	15# Steel tees, provide rail backing as required
16.	Buffers	Spring
17.	Cab	As further specified
18.	Entrance Size	36" wide x 84" high
19.	Door Operation	Single Speed Side Opening
20.	Machine Type	Hydraulic
21.	Pump Location	Adjacent or Remote: See Architectural Drawings
22.	Power Supply	480 – 3 - 60

G. Elevator – STL3

1.	Quantity	One (1)
2.	Type	Passenger single stage dual jack holeless hydraulic

3.	Capacity (lbs.)	2000
4.	Speed (fpm)	100
5.	Travel in Feet	12'-0"
6.	Number of Landings	Two (2)
7.	Number of Openings	Two (2)
8.	Front Opening	2@ B-2
9.	Rear Opening	None
10.	Operation	Two Stop Operation
11.	Control	AC for Hydraulics
12.	Fireman's Control	Phase I & II
13.	Number of Push Button Risers	One (1)
14.	Platform Size	6'-0" wide x 5'-2" deep
15.	Guide Rails	15# Steel tees, provide rail backing as required
16.	Buffers	Spring
17.	Cab	As further specified
18.	Entrance Size	36" wide x 84" high
19.	Door Operation	Single Speed Side Opening
20.	Machine Type	Hydraulic
21.	Pump Location	Adjacent or Remote: See Architectural Drawings
22.	Power Supply	480 – 3 - 60

H. Elevator – SUB3

1.	Quantity	One (1)
2.	Type	Service traction
3.	Capacity (lbs.)	4000
4.	Speed (fpm)	200
5.	Travel in Feet	48'-0"
6.	Number of Landings	Five (5)

7.	Number of Openings	Nine (9)
8.	Front Opening	5@ B, 1-4
9.	Rear Opening	4@ M, 2-4
10.	Operation	Group Automatic w/SUB4-SUB5
11.	Control	Variable voltage variable frequency
12.	Fireman's Control	Phase I & II
13.	Number of Push Button Risers	Two (2)
14.	Platform Size	6'-0" wide x 7'-11.5" deep
15.	Guide Rails	15# Steel tees, provide rail backing as required
16.	Buffers	Oil
17.	Cab	As further specified
18.	Entrance Size	Front: 48" wide x 84" high Rear: 48" wide x 84" high
19.	Door Operation	Front: Two Speed Side Opening Rear: Two Speed Side Opening
20.	Machine Type	Gearless
21.	Machine Location	Overhead
22.	Counterweight Safety	Not Required
23.	Power Supply	480 – 3 - 60

I. Elevator – SUB4-SUB5

1.	Quantity	Two (2)
2.	Type	Passenger traction
3.	Capacity (lbs.)	3000
4.	Speed (fpm)	200
5.	Travel in Feet	48'-0"
6.	Number of Landings	Five (5)
7.	Number of Openings	Five (5)
8.	Front Opening	5@ B, 1-4

9.	Rear Opening	None
10.	Operation	Group Automatic
11.	Control	Variable voltage variable frequency
12.	Fireman's Control	Phase I & II
13.	Number of Push Button Risers	One (1)
14.	Platform Size	4'-10" wide x 7'-6" deep
15.	Guide Rails	15# Steel tees, provide rail backing as required
16.	Buffers	Oil
17.	Cab	As further specified
18.	Entrance Size	36" wide x 84" high
19.	Door Operation	Single Speed Center Opening
20.	Machine Type	Gearless
21.	Machine Location	Overhead
22.	Counterweight Safety	Not Required
23.	Power Supply	480 – 3 - 60

2.3 MANUFACTURERS

A. Pre-Approved Equipment Manufacturers

1. The following manufacturer's equipment and materials may be used on this project.
2. Other equipment not specifically mentioned shall be considered for approval on an individual basis.
3. Certain Original Equipment Manufacturers equipment is acceptable unless otherwise specified.
 - a. Controller - GAL (GALaxy), Motion Control Engineering, Elevator Controls Corporation, Elevator Systems, Inc., Smartrise
 - b. Tracks, Hangers, Interlocks and Door Operators - G.A.L., ECI.
 - c. Fixtures - G.A.L., Adams, EPCO, Monitor, E-Motive USA, C.E. Electronics, Innovation, PTL, MAD, National.
 - d. Door Protective Device - Janus, Adams, G.A.L., T.L. Jones, Tri-Tronics.
 - e. Cabs and Entrances/Entrance Door Panels - Accurate Elevator Door Corp, CEC Elevator Cab, EDI/ECI, Elite Elevator Cab, National Cab & Door, Tyler, Velis, Gunderlin, Premier, Prestige, Regency, Columbia Elevator Products, United Cabs.
 - f. Machines - Hollister-Whitney, Titan, Imperial, Torin.
 - g. Motors - Imperial Electric, General Electric, Baldor, Reuland Electric.

- h. SCR Power Drives - MagneTek DSD 412, MagneTek 'Quattro', MCE System 12, KEB.
- i. VVVF Power Drives - Mitsubishi, MagneTek, Yaskawa, TorqMax.
- j. VVVF Emergency Power Systems - MCE, Reynolds & Reynolds Electronics.
- k. Guide Rails - AFD Industries, Savera, Monteferro.
- l. Electrical Traveling Cables - Draka, James Monroe.
- m. Hydraulic Systems/Components - Canton, ECS Corporation, Elevator Equipment Corporation, Mongrain Vertical Transport (MVT), MEI, Schumacher.
- n. Guide Shoes/Rollers - ELSCO, G.A.L.
- o. Wire Ropes - Paulsen, Bethlehem, Wayland, Draka.
- p. Intercommunications/Telephones - Webb Electronics, K-Tec, Ring, Wurtec, Janus, approved equal.
- q. Compensation Chains - Draka or approved equal.
- r. Compensation Chain Guides - Draka super sway-less or approved equal.

2.4 CONTROL FEATURES / OPERATION

A. Cross Cancellation - HAB1 & HAB2, SUB3-SUB5

- 1. A temporary dispatch signal control interface shall be provided during the interim modernization period between the existing dispatching control panel and the new microprocessor supervisory control system.
- 2. The overlay interface shall allow either system to cross cancel corridor calls registered in both systems and maintain an acceptable level of group dispatching operations.
- 3. The existing equipment that is retained on a temporary basis shall undergo a complete maintenance restoration to ensure improved reliability and performance during the primary work implementation period.

B. Motion Control - All Elevators

- 1. Smooth stepless acceleration and deceleration of the elevator car shall be provided in either direction of travel during both single and multiple floor runs.
- 2. Use digital logic to calculate optimum acceleration and deceleration patterns during each run.
- 3. Acceleration, deceleration, jerk, maximum velocity, leveling accuracy and elapsed flight time, for a typical elevator one floor run, shall not exceed values as further specified.

C. Two Stop Collective Operation - STL2, STL3

- 1. A car call or hall call registration will allow the car to proceed to the destination after the hoistway door and car door automatically close and the door and gate circuits are made.
- 2. Upon arrival at the landing, the doors will open automatically.
- 3. When the car is traveling away from a registered hall call, the call shall remain registered and the car shall respond on the next trip.
- 4. Car and hall calls shall cancel automatically as the car stops at the respective call.

D. Simplex Selective Collective Operation - CSB1, SAB1, LC1, STL1

- 1. Provide simplex selective collective operation from a riser of hall push button stations.
- 2. The registration of one or more car calls shall dispatch the car to the selected floors.

- a. The car shall also respond to registered hall calls in the same direction of travel.
 - b. Car and hall calls shall be canceled when answered.
3. Stops in response to calls that are registered in either the car or hall push button stations shall occur in the natural order of progression in which the floors are encountered, depending on the direction of car travel, and irrespective of the order in which calls are registered.
4. When the car has responded to the highest or lowest call, and calls are registered for the opposite direction, the car shall reverse direction automatically and respond to those registered calls.
5. When the car arrives at its last stop and reverses direction of travel, all previously registered car calls shall be automatically cancelled.
6. When the car arrives at a landing where both up and down hall calls are registered, it will answer the call in the direction of travel.
 - a. After a pre-determined delay, if no car call is registered, the car shall respond to calls registered for the opposite direction. Car doors shall close immediately, re-open and respond to the call for the opposite direction.
 - b. Hall lantern operation shall always correspond to direction of service.
7. When an empty car reverses direction at a landing with no hall calls, the doors shall not open and the hall lantern shall not operate.
8. If the car has no car calls registered and arrives at a floor where both up and down hall calls have been registered, the car shall respond to the hall call corresponding to the last direction of car travel. If, after making its stop, a car call is not registered and no other hall calls exist ahead of the car corresponding to its original direction of travel, the doors shall close and immediately reopen in response to the hall call for the opposite direction.
9. The car shall maintain its original direction at each stop until the doors are fully closed to permit a passenger to register a car call before the car reverses its direction of travel.

E. Automatic Group Duplex / Selective Collective Operation - HAB1 & HAB2

1. Provide duplex selective collective operation with the two cars arranged to operate from a single riser of hall push buttons.
2. When there is no demand for elevator service, park one car at the Lobby Floor and the other shall be a "free car", parking at the floor last served.
 - a. Park both cars with doors closed.
 - b. The "free car" shall normally respond to any registered hall call except:
 - 1) A hall call registered at the Lobby Floor shall be answered by the car parked at the Lobby Floor.
 - 2) A hall call registered below the Lobby Floor shall be answered by the car parked at the Lobby Floor.
3. When the car parked at the Lobby Floor responds to a registered call for a floor above the Lobby Floor, the "free car" shall be dispatched automatically to the Lobby Floor, and shall become the assigned Lobby Floor parking car.
4. When the "free car" is responding to registered calls, the Lobby Floor parking car shall automatically dispatch from the Lobby Floor under any of the following conditions:

- a. Registration of hall call below the "free car" while it is traveling in the up direction.
 - b. Registration of hall call above the "free car" while it is traveling in the down direction.
 - c. Inability of the "free car" to move in response to a registered hall call within a predetermined time.
5. When both cars are responding to registered car and hall calls, the first car to complete its calls shall become the assigned Lobby Floor parking car and shall be dispatched automatically to the Lobby Floor.
6. If either car is removed from service, the other car shall respond to all registered hall calls and its own car calls.
7. When a car arrives at its last stop and reverses direction of travel, all previously registered car calls shall be automatically cancelled.
8. When a car has responded to the highest or lowest call, and hall calls are registered for the opposite direction, the car shall reverse direction automatically and respond to those registered calls.
9. When a car arrives at a landing where both up and down hall calls are registered, it will answer the call in the direction of travel.
 - a. If no car call is registered, the car shall be assigned to respond to call registered for the opposite direction. The car doors shall immediately close and re-open to respond to the call in the opposite direction.
 - b. Hall lantern operation shall always correspond to direction of service.
10. When an empty car reverses direction at a landing with no hall calls, the doors shall not open and the hall lantern shall not operate.
11. If a car has no car calls registered and arrives at a floor where both up and down hall calls have been registered, the car shall respond to the hall call corresponding to the direction of car travel.
12. If, after making its stop, a car call is not registered and no other hall calls exist ahead of the car corresponding to its original direction of travel, the doors shall close and immediately reopen in response to the hall call for the opposite direction.
13. The car shall maintain its original direction at each stop until the doors are fully closed to permit a passenger to register a car call before the car reverses its direction of travel.
14. In the event that any car is delayed for more than a predetermined time interval after it received a start signal, the system shall automatically permit the remaining car in the two car group to respond to signals and be dispatched in the specified manner.
15. Coincident calls: The dispatching system shall be designed with a twenty (20) second parameter whereby an elevator with a car call will receive priority to answer a corresponding corridor call if it can do so within twenty (20) seconds. If it cannot answer the call within the prescribed time, the first available car shall be assigned. A continuous reassessment of calls shall be made, with the processor having the capability of reassessing five (5) times per second.
16. In the event the supervisory control system should malfunction so that neither elevator is assigned calls within a predetermined interval and in accordance with the conditions of the operating strategy in effect, the system shall automatically assume a back-up mode of operation whereby the elevators shall be arranged to provide continuous service to each landing in a predetermined pattern without regard to actual corridor call demands.

F. Automatic Group Operation / Conventional Dispatch - SUB3-SUB5

1. Provide a microprocessor based group supervisory control system for the operation of the elevators.
2. Elevators shall be arranged to operate with or without attendants as an automatic group.
 - a. The group shall remain capable of sustaining balanced service and continuing operation with one or more cars removed from the system.
 - b. Elevators shall operate from pushbutton panels located inside each car and from a riser of corridor pushbutton fixtures located on each landing served.
3. Elevators shall automatically travel to landings for which a call demand exists.
 - a. Stops in response to calls that are registered at either the car or hall push button stations shall occur in the natural order of progression in which the floors are encountered, depending on the direction of car travel, and irrespective of the order in which calls are registered.
4. Call acknowledgment lights provided in both the car and hall push button fixtures shall become extinguished as the car responding to a particular call begins its slowdown approach to the corresponding landing.
5. In the event no demand for elevator service exists, the first car to satisfy its assigned calls shall be dispatched to park at the main landing.
 - a. In the event additional cars should also complete their call assignments, those cars shall be individually dispatched to previously designated parking floors.
 - b. Parking assignments shall be accomplished without door operation.
 - c. Should the elevator parked at the main landing receive a call assignment, another free car in the group shall immediately assume that parking assignment.
 - d. The number of elevators assigned to park at any particular landing shall be programmable.
6. The group supervisory controller shall, through a dispatching algorithm along with artificial intelligence parameters, continuously scan the system in order to determine the load each car is transporting and to monitor the number of corridor calls registered, the duration of each call, and the intended direction of travel, the number of loaded lifts, etc.
 - a. Based upon that data, the supervisory system shall automatically devise a strategy for call assignment with preference given to calls registered in the following order:
 - 1) lobby demand.
 - 2) long waiting times – down.
 - 3) long waiting times – up.
 - 4) up calls.
 - b. Long wait calls shall be considered those which have remained unanswered for at least forty (40) seconds. The long wait call threshold time shall be programmable.
7. If a car with no car calls arrives at a landing where both up and down hall calls are registered, it will answer the call in the direction of travel.
 - a. If no car call is registered, the car shall be assigned to respond to the call registered for opposite direction.

- b. The doors shall close and immediately re-open when responding to this call.
 - c. Hall lantern operation shall always correspond to direction of service.
8. In the event that any car is delayed for more than a predetermined time interval after it received a start signal, the system shall automatically permit the remaining cars in the group to respond to signals and be dispatched in the specified manner.
9. In the event the group dispatching or supervisory system should malfunction so that elevators are not assigned to calls within a predetermined interval and in accordance with the conditions of the operating strategy in effect, the system shall automatically assume a back-up mode of operation whereby the elevators shall be arranged to provide continuous service to each landing in a predetermined pattern without regard to actual corridor demand.
- a. Failure of the automatic dispatching system will be indicated by an illuminated signal in the Lobby Elevator Control Panel or Elevator Information and Management System where applicable.
10. In the event of failure of the landing call button circuit, provide a means to enable the elevators to service each floor without registration of a call within the elevators.
- a. When emergency operation is in effect, provide an illuminated signal in the Lobby Elevator Control Panel or Elevator Information and Management System where applicable.
11. When a car arrives at its last stop and reverses direction of travel, all previously registered car calls shall be automatically cancelled.
12. When a car has responded to the highest or lowest call, and hall calls are registered for the opposite direction, the car shall reverse direction automatically and respond to those registered calls.
13. When an empty car reverses direction at a landing with no hall calls, doors shall not open and the hall lantern shall not operate.
14. Main Lobby Operation:
- a. Only the "Next" designated car shall have its hall lantern illuminated and its doors open.
 - b. When a "down" traveling car which is not designated "Next" arrives at the main lobby with a lobby car call registered, it will open its door to discharge the passengers, close the doors, and shall not illuminate its lantern.
 - c. When a "down" traveling car with no car calls arrives at the main lobby and is not designated "Next", it shall park without opening its doors.
15. Coincident Calls:
- a. The dispatching system shall be designed with a twenty (20) second parameter whereby an elevator with a car call will receive priority to answer a corresponding corridor call if it can do so within twenty (20) seconds.
 - b. If the elevator cannot answer the call within the prescribed time, the first available car shall be assigned.
 - c. A continuous reassessment of calls shall be made.

G. Independent Service Operation - All Elevators

1. The car operating station shall be equipped with a key-operated switch labeled "IND SER".
2. Locate the switch in the locked service compartment.
3. When placed in the "on" position the following shall occur:
 - a. Group elevator - the elevator shall bypass corridor calls and travel directly to any floor chosen by registration of a car call. Hall calls shall remain registered for service by another elevator in the group.
 - b. Simplex elevator - existing hall call registrations shall extinguish and hall buttons shall remain inoperative as an indication to passengers that there is no elevator service.
4. During Independent Service Operation, the elevator doors shall remain open at any landing until the door close or a car call push button is pressed and maintained until the doors are fully closed.
5. If more than one (1) car call is registered, all registered car calls shall extinguish when the elevator stops in response to the first call.
6. Fire Emergency Recall shall automatically override Independent Service Operation and engage Phase I - Fire Emergency Recall Operation following a period of approximately forty-five (45) seconds.

H. Inspection Service Operation - All Elevators

1. Provide a key operated switch in the main car operating panel locked service panel that, when turned to the 'ON' position, shall cause the elevator to be removed from service and placed in Inspection Service Operation.
2. Limited operation of the car shall be provided through pressing the Attendant Service up and down push buttons (if provided) or the highest or lowest car call push buttons (if up and down buttons are not provided) in the main car operating panel only.
3. The car shall move at a speed not to exceed 150 feet per minute (0.75 meters per second) as per code with both the hall and car door panels in the closed and locked position.
4. The Inspection Service switch shall be keyed differently than other typical keys used in the operation of the elevator. Keying shall be in accordance with Security Group Classifications as required by applicable code.
5. The top of the elevator car shall be equipped with a control for limited operation of the car during repairs, maintenance and inspection conducted in the hoistway. The transfer of control to the top of car operating device shall cause that device to be the sole means of control for the elevator.
 - a. Visual and audible indication shall be provided on the top of the car when Firefighters' Emergency Operation is initiated.
6. Power door operating equipment shall be rendered inoperative while the car is being operated in the Inspection Service mode with the exception of power closing of the door. The control system shall maintain closing power on the door while the elevator is moving under Inspection Service Operation.
7. The in-car Inspection Service switch shall be rendered ineffective when the top of car inspection control is activated.
8. Machine Room Inspection Operation and Inspection Operation with open door circuits shall be provided in accordance with A17.1 Safety Code, as modified and adopted, where required or allowed by the AHJ.

I. Hoistway Access Operation - All Elevators

1. Provisions shall be made to allow access to the hoistway through the use of hoistway access switches.
2. Operating the access switch shall permit the car to move at a speed not to exceed 150 feet per minute (0.75 meters per second) as per code with the hall and car doors in the open position to obtain access to the top of the car or climb-in pit.
3. The car shall automatically stop motion when the car top is level with the hoistway door sill for access to top of car.
4. The access key switch(es) shall be keyed differently than other typical keys used in the operation of the elevator. Keying shall be in accordance with Security Group Classifications as required by applicable code.
5. Access operation shall be disabled when top of car inspection operation is in effect.

J. Load Weighing Operation - All Elevators

1. A positive means shall be provided to continuously monitor the amount of load being transported by the elevator car.
2. The system shall be used to:
 - a. Preload static motor drives.
 - b. Activate control features that include:
 - 1) anti-nuisance operation.
 - 2) load dispatch operation.
 - 3) load dependent non-stop operation where applicable.
3. The anti-nuisance feature shall operate at loads not exceeding 200 lbs., whereas load dispatch and load non-stop shall be set to function at 65% of the rated loading capacity for the initial set up and adjustment procedure.

K. Firefighters' Emergency Operation - All Elevators

1. Firefighters Service Operation and devices shall meet applicable code requirements of the AHJ.
2. Contractor shall be responsible for compliance in all aspects of Firefighters Service including, but not limited to the mode of operation, initiation of operation, operating control and signaling devices as well as fixture engraving including operating instructions applicable to and where required by the AHJ.

L. Emergency Power Operation / Duplicate Existing - New Sequential Control

1. Existing provisions shall be duplicated and upgraded for automatic sequential operation.
2. Provisions shall be included in the new elevator control system whereby, immediately after transferring to the building emergency power system, all affected elevators shall automatically return the fire recall designated landing in progressive numerical sequence at normal operating speed.
 - a. Car and corridor calls shall become inoperative and all previously registered calls shall be canceled.

- b. As each car arrives at the designated landing, it shall park out of service with its door in the open position.
 3. An illuminated signal marked "ELEVATOR EMERGENCY POWER" shall be provided in the elevator lobby at the designated landing to indicate that the normal power supply has failed and the emergency power is in effect.
 4. In the event an elevator fails to respond to a recall command within forty-five (45) seconds under Emergency Power Operation, that car shall be bypassed and the next car in the sequence shall be recalled.
 5. Upon completion of the recall process, one or more elevators shall be automatically selected to run on the emergency power source (duty car(s)).
 6. Interlock all elevators to allow to operate the maximum number of elevators at a time.
 7. An emergency power control panel shall be provided where indicated by the Owner containing an indicator light per elevator that becomes illuminated whenever a transfer to emergency power takes place.
 - a. Provide a key-operated override switch and a manual selector switch with a position indicator for each elevator.
 - b. Activating the key-operated override switch while on emergency power shall cancel the automatic recall sequence and allow positioning of the manual selector switch to select a car for operation.
 - c. Means shall be provided on or adjacent to the control panel to indicate that the elevator is at the designated level with the doors in the open position.
- M. Elevator Safety Requirements for Seismic Zone 2 - All Elevators
 1. Guarding of equipment, machine supports, guide rail systems, the design of counterweight car frame and platform, safeties and signaling devices shall meet the requirements of ASME A17.1.
 2. Guide rails, guide rail supports and their fastenings shall meet requirements for the seismic zone.
 3. Provide a safety valve in the oil supply line as close as possible to the cylinders to stop and hold the elevator with rated load when the oil flow rate exceeds the oil flow rate required for the operating speed in the "down" direction, but before it reaches 125% of the down speed oil flow rate.
 4. Equip the pump unit with required supports to prevent displacement.
- N. Floor Lockout Feature / Keyless - Card Reader Control / Wiring Provisions
 1. Wiring: Provide six (6) pair of 20 gauge two (2) flexible conductor low voltage cables with an overall braided shield in the traveling cable of all elevators for card reader interface.
 - a. The cables shall extend from the security interface terminal cabinet in the elevator machine room to behind the elevator return panel above the space allotted for the card reader.
 - b. Terminate the cable to dual screw barrier terminal strips on each end.
 2. Card Reader Space: Allocate card reader space in each main car station as directed by the Architect. Provide a flush Lexan lens and mounting provisions for the card reader unit which is provided by others.

3. Interface: For floor programmable card access control in all elevators, provide a pair of terminals for all floors such that application of a momentary dry (no voltage present) contact closure across those terminals by the security system shall enable the selection of the corresponding floor from the floor selector button in the elevator cab.
 - a. Locate the terminals inside an interface terminal cabinet in the elevator machine room.
 - b. Provide all relays required to interface the elevator control system to the momentary dry contact closures provided for under another section of these specifications.
 - c. If applicable, the card reader shall be operable and compatible with the issued card keys used building wide.
 - d. Coordinate system requirements with the manufacturer of the issued card key system.
 4. Card Reader "Secure/Bypass" Switch: Provide separate card reader control bypass key switches for each elevator.
 - a. The bypass key switches shall be located in the Director's Control Panel.
 - b. The bypass key switches shall be a maintained contact type key switch with the key removable in the secure or bypass position.
 - 1) When the key switch is in the secure position, the card reader control mode shall be initiated.
 - 2) When in the bypass position, the card reader control mode shall be bypassed and the elevator shall return to normal operation, permitting free access to any floor.
 5. The card reader operation shall bypass floor cut-out switches.
 6. Firefighters' Service Operation shall override Floor Lockout Feature.
- O. Floor Lockout Feature / Keyed Security Control / Car Only
1. Provide a car call floor lockout feature for the elevators which will prevent registration of car calls to floors that are "locked out".
 - a. Provide a two (2) position "on-off" key switch located in the car station adjacent to each floor call button except the primary egress floor.
 - b. Turning the key switch to the "off" (locked out) position shall prevent the registration of a call when the corresponding car call button is pressed.
 - c. The key switches shall be individually keyed with a master as directed by the Owner.
 2. Activation of a floor lockout key switch shall have no effect on the operation of the hall call station, i.e., the car can be called to a floor from the hall button on the floor that is locked out in the car station.
 3. The "floor lockout" key switches shall be in a material and finish to match the car operating panel cover plate.
 4. Firefighters' Emergency Operation shall override the car call lockout feature.
- P. Car to Lobby Operation
1. Provide a key-operated Car-to-Lobby feature.

- a. The existing control panel shall be retained in its present location and the existing key-operated switch for each elevator shall be reused.
2. When engaged, this feature shall:
 - a. Cause the affected elevator to return non-stop to the lobby after it has discharged all registered car calls.
 - b. Open the door upon arriving at the lobby for approximately ten (10) seconds, after which the elevator shall park out of service with the door closed.
 - c. Maintain door open button function during the interval in which the car is out of service.
3. Returning the key-operated switch in the lobby panel to the “on” position shall restore the car to normal operation.
4. Override the Priority Service feature with Firefighters’ Service in accordance with code and local law.

Q. Door Operation - All Elevators

1. Car and hoistway doors shall be arranged to operate in unison without excessive noise or slamming in either direction of travel.
 - a. Door opening speeds of two (2) feet per second shall be provided in conjunction with closing speeds of 1.0 foot per second in accordance with governing code.
 - b. Door operation shall commence as the car stops level at the floor and the machine brake is applied. Pre-door opening shall not be permitted.
2. Where the hoistway door and the car door are mechanically coupled, the kinetic energy of the closing door system shall be based upon the sum of the hoistway and the car door weights, as well as all parts rigidly connected thereto, including the rotational inertia effects of the door operator and the connecting transmission to the door panels.
3. The force necessary to prevent closing of the car and hoistway door from rest shall not exceed thirty (30) lbf. This force shall be measured on the leading edge of the door with the door at any point between one-third and two-thirds of its travel.
4. Door open and door close time shall be measured between the moment car door operation in either direction begins and the instant at which that cycle is completed.
5. When responding to either a car or corridor call, the amount of time that the elevator door remains stationary in the open position shall be adjustable up to sixty (60) seconds.
 - a. Door open dwell time for a corridor call shall be separate of that for a car call, and in both cases, dwell time shall be canceled whenever the car door protection device is momentarily interrupted by passenger transfers, followed by a reduced door open dwell time of approximately one (1) second (adjustable) after the door protection device is cleared of obstructions.
6. The operation of the door protective device by interruption of one or more infrared light beams (dual or multi-beam non-contact) during the close cycle shall cause the immediate reversing of the doors to the full open position.
7. The door closing cycle shall be arranged so that, in the event the door protective devices become continually obstructed after the normal door open dwell time has expired, and following a time interval of approximately thirty (30) seconds (adjustable), a warning tone

- shall sound and the door closing cycle shall commence at reduced speed and torque per applicable Code requirements.
8. Each car operating station shall be provided with a “door open” and “door close” push button.
 - a. Pressure on the “door open” button shall cause doors in the full open position to remain so and doors engaged in the close cycle to reverse direction and assume the full open position so long as pressure remains applied to the button.
 - b. The “door open” buttons shall also control the open cycle during Phase II - Emergency In-car Operation.
 - c. The “door close” push button shall function on Independent Service, Attendant Service and Phase II - Emergency In-car Operation as well as during normal automatic operations.
 9. Each car operating station shall be provided with a “door hold” push button.
 - a. Pressure on the “door hold” button shall cause doors in the full open position to remain in the open position and doors operating in the close cycle to reverse direction and travel to the full open position for an extended (adjustable) period of time to allow for loading and unloading.
 - b. The “door hold” feature shall be overridden when the elevator is on Fire Emergency Phase I and Phase II.
 - c. The “door hold” feature shall be canceled when the “door close” button is pressed.
 10. Repeated attempts by the power door operator to open or close the door at any landing shall be monitored by the control system.
 - a. In the event the door fails to cycle properly after a preset (adjustable) number of attempts, the car shall either travel to the next stop or remove itself from service, depending upon whether the malfunction is in the open or close cycle.
 11. Each hoistway door shall be provided with an automatic self-closing mechanism arranged so that the door shall close and lock if the car should leave the landing while the hoistway door is unlocked.
 12. Car doors shall be arranged to prevent their being manually opened from inside the car unless the elevator is positioned within a floor landing zone.

2.5 MACHINE ROOM / SECONDARY EQUIPMENT

A. Controller / Dispatcher - All Elevators

1. The elevators shall have generic microprocessor based controller/dispatchers.
2. Digital logic shall calculate optimum acceleration, deceleration and velocity patterns for the car to follow during each run.
3. Closed-loop distance and velocity feedback shall monitor the actual performance of the elevator car with the desired speed profile.
4. System operating software shall be stored in non-volatile memory.
5. Elevator control relays, contactors, switches, capacitors, resistors, fuses, circuit breakers, overload relays, power supplies, electronic circuit boards, microprocessors, static motor

drive units, wiring terminal blocks and related components shall be totally enclosed inside a free-standing metal cabinet with hinged access doors.

- a. Provide natural or mechanical ventilation for the controller cabinets.
 - b. Equip the vent openings and exhaust fans with filters.
6. Mount equipment to moisture-resistant, noncombustible panels supported from the steel frame.
 7. Provide "noise filter" between hoistway wiring and controller/dispatchers to eliminate interference.
 8. Optically isolate communication cables between components.
 9. Provide a solid state starter for the pump motor. – STL2 & STL3
 10. Wiring: Wiring on the units, whether factory or field wiring, shall be done in neat order, and all connections shall be made to studs and/or terminals by means of grommets, solderless lugs or similar connections. All wiring shall be copper.
 11. Terminal Blocks: Provide terminal blocks with identifying studs on units for connection of board wiring and external wiring.
 12. Marking: Identifying symbols or letters shall be permanently marked on or adjacent to each device on the unit, and the marking shall be identical with marking used on the wiring diagrams. In addition to the identifying marks, the ampere rating shall be marked adjacent to all fuse holders.
 13. The manufacturer's standard on-board "LCD" display shall be incorporated on the main processor board and/or otherwise incorporated in the controller cabinet. The "LCD" shall be capable of providing alpha-numeric characters to view the operational status of the elevator and/or group functions depending on the application. The display shall provide the user with necessary information for troubleshooting and reprogramming of the basic system parameters.
 - a. Where the "LCD" is not an integral part of the controller and troubleshooting/reprogramming requires the use of a separate tool, the tool shall be maintained in the machine room and accessible to service personnel. This tool, along with all technical documentation for the correct use of the tool, shall remain the property of the Owner.
 - b. Password protection of critical programming features is required to prevent accidental changes to life-safety and other non-typical control settings.
 - c. Where a separate dispatch or group control panel is provided, a separate "LCD" display shall be provided to view group functions.
 14. In the event diagnostics and monitoring is accomplished via Field Service Tools, provide the required Field Service Tools with related control system appurtenances for diagnostic evaluations, system monitoring and field adjustments.
 - a. Provide instructions for proper use of such diagnostic tools and/or equipment with all coding and other operational requirements.
 - b. Maintain and calibrate the diagnostic tools, and update the associated instructions and other related documents under the service agreement.
 - 1) Should the agreement be cancelled for any reason by either party, maintenance and updating of diagnostic tools shall be provided to the Owner at the Contractor's cost without the need to purchase or lease additional

diagnostic devices, special tools or instructions from the original equipment provider.

- 2) The Owner may request field and technical instructions be provided by the original installation contractor or manufacturer for proper servicing by other qualified elevator company personnel.
- 3) The established cost plus profit, as previously specified, shall be applicable for the life of the system.
 - a) If the equipment for fault diagnosis is not completely self-contained within the controllers but requires a separate detachable device, that device shall be furnished to the Owner as part of this installation.
 - b) Such device shall be in possession of and become property of the Owner.

15. Microprocessor Documentation

- a. Provide and/or obtain complete information on systems' design, component parts, installation and/or modification procedures, adjusting procedures and associated computer conceptual logic circuitry and field connection.
- b. Provide microprocessor upgrading and/or modifications to programs that have been assigned to enhance the operation of the equipment for a period of ten (10) years after project approval.

B. Machine Beams (Existing) - SAB1, LC1, STL1, HAB1 & HAB2, SUB3-SUB5

1. Provide additional support beams, angles, plates, bearing plates, blocking steel members, etc., to support new machine, governors, dead end hitches, deflector and overhead sheaves from existing machine beams where applicable.
2. Contractor shall verify adequacy of all existing supports scheduled to be reused. Report adequacy, inadequacy, and any potential issues, to the owner in writing.

C. Gearless Elevator Hoisting Machine - SAB1, LC1, STL1, HAB1 & HAB2, SUB3-SUB5

1. Provide a permanent magnet synchronous motor (PMSM) gearless traction machine, specially designed and manufactured for elevator service. The machine shall have high starting torque and low starting current, rated for 50⁰ C (90⁰ F) continuous operation, and a minimum of 240 starts per hour.
 - a. The traction driving sheave and brake drum shall be cast integral and bolted securely to the main armature shaft.
 - b. Securely mount the machine frame, including motor fields, bearing stands and brake on a heavy steel bedplate.
 - c. The armature shaft shall be supported in ball or roller type bearings.
 - d. Minimum class "F" (or approved equal) insulation shall be used to ensure long-term reliability.
 - e. The driving sheave shall be cast from the best grade of metal with a Brinell hardness of 215 to 230 and shall be machined with grooves, providing maximum traction with a minimum of rope and sheave wear.

- 1) Roping requirements and type of steel rope used as suspension means shall be engineered by the contractor and manufacturer of the equipment for maximum life of ropes and sheave.
- f. Ensure that adequate ventilation of internal stator windings and rotating element is provided to prevent overheating with thermal overload protection. (Constant velocity fan for constant cooling.)
- g. Equip housing with eyebolt(s) for lifting.
- h. Provide the machine with an electro-mechanical brake.
 - 1) Brakes shall be drum or disk-type.
 - 2) The brake shall be spring applied and electrically released.
 - 3) Design the brake electro-magnet for quick release and application of the brake.
 - 4) The brake lining material shall be non-asbestos.
- i. Design the brake for quick release to provide smooth and gradual application of the brake shoes or pads.
 - 1) An emergency brake shall be an integral part of the machine design.
- j. Provide 14-gauge hoist cable guards at the car-drop and counterweight-drop side of the machine sheave.
 - 1) Guards shall cover cables from the point of slab penetration to the point where the hoist cables contact the sheave.
 - 2) Guards shall prevent access to cables at pinch points.
 - 3) Guards shall have no sharp edges.
 - 4) Guards shall be properly mounted to prevent vibration.
- k. Provide a raised machine arrangement so that the deflector sheave is located above the machine room slab. Provide adequate steel blocking members to support the machine assembly.
 - 1) Provide service platforms, grating, handrails, ladders and required accessories to service and maintain the hoisting machines.
- l. Provide a sheave guard to prevent hoisting rope from jumping off grooves and to prevent possible entrapment on both sides of the floor penetrations.
- m. Design and construct the hoisting machine based on passenger elevator cab enclosure weight as specified and as shown on the architectural drawings.

D. Gearless Elevator Hoisting Machine [MRL] – CSB1

1. Provide a permanent magnet synchronous motor (PMSM) gearless traction machine, specially designed and manufactured for elevator service. The machine shall have high starting torque and low starting current, rated for 50⁰ C (90⁰ F) continuous operation, and a minimum of 240 starts per hour.
 - a. Securely mount the machine to overhead steel beams or to the guide rail system.
 - b. The armature shaft shall be supported in ball or roller type bearings.

- c. The driving sheave shall be cast from the best grade of metal with a Brinell hardness of 215 to 230 and shall be machined with grooves, providing maximum traction with a minimum of rope and sheave wear.
- d. Ensure that adequate ventilation of internal stator windings and rotating element is provided to prevent overheating with thermal overload protection. (Constant velocity fan for constant cooling.)
- e. Equip housing with eyebolt(s) for lifting.
- f. Provide the machine with an electro-mechanical brake.
 - 1) The brake shall be spring applied and electrically released where drum or disk-type brakes are employed.
 - 2) Design the brake electro-magnet for quick release and application of the brake.
 - 3) The brake lining material shall be non-asbestos.
- g. Design the brake for quick release to provide smooth and gradual application of the brake shoes.
 - 1) An emergency brake shall be an integral part of the machine design.
- h. Provide a sheave guard and rope retainer on the machine sheave to prevent hoisting rope from jumping off the grooves.
 - 1) Provide service platforms, grating, handrails, ladders and required accessories to service and maintain the hoisting machines.
- i. Design and construct the hoisting machine based on passenger elevator cab enclosure weight as specified and as shown on the architectural drawings.

E. Machine Brake - SAB1, LC1, STL1, HAB1 & HAB2, SUB3-SUB5, CSB1

- 1. Provide an electro-mechanical brake.
 - a. Drum or disk-type brakes shall be spring applied and electrically released.
 - b. Design the brake electro-magnet for quick release and application of brake shoes.
 - c. Swivel type brake shoes shall be applied to the braking surface (pulley or disk).
 - d. The brake lining material shall be non-asbestos and shall be attached to two (2) cast iron shoes.
 - e. The brake pulley or disk shall act as the coupling between the drive motor shaft and the worm shaft.
- 2. The brake shall be designed and adjusted to safely hold 125% of rated full load capacity in accordance with applicable code.

F. VVVF AC Drive - SAB1, LC1, STL1, HAB1 & HAB2, SUB3-SUB5, CSB1

- 1. Provide a solid-state, variable voltage, variable frequency (VVVF), 3-phase AC hoist motor drive system as part of the microprocessor-based equipment.
 - a. VVVF drive system shall be a low-noise, flux-vector inverter device.

- b. Include a digital LED readout and touch-key pad to facilitate software parameter adjustments, monitor system operation and display fault codes.
- 2. The drive shall utilize a 3-phase, full wave rectifier and capacitor bank to provide direct current power for solid-state inversion.
- 3. The inverter shall utilize IGBT power semiconductors and duty cycle modulation fundamental frequency of not less than one kilohertz to synthesize 3-phase, variable voltage variable frequency output.
- 4. The system shall be designed and configured with the following countermeasures for noise generated by the pulse-width modulated (PWM) inverters.
 - a. Control of radiated noise via inverter and/or motor cables.
 - b. Conducted noise through power lines.
 - c. Induction noise and ground noise.
- 5. Inverter shall be encased in metal and independently grounded.
- 6. A noise filter for the input power line shall be provided to prevent penetration into radios, wireless equipment and smoke detectors.
- 7. A 3% three-phase line reactor shall be provided on the power system rated at the utility voltage input to the drive and sized for the rated drive current.
- 8. The drive shall:
 - a. Be configured as a complete digital drive system.
 - b. Be totally software configurable.
 - c. Interface with external equipment/signals via either discrete local I/O connections or high speed Local Area Network (LAN).
 - d. Be located within the limits of the control cabinet (where system size allows) or separately mounted in an appropriate chassis with hinged swing-out doors with clearances equal to the cabinet width dimensions.
 - e. Provide programmable linear or S-curve acceleration.
 - f. Provide free run or programmable linear or S-curve deceleration.
 - g. Have controlled reversing.
- 9. Operating and Environmental Conditions:
 - a. Have a service factor of 1.0.
 - b. Rated for continuous duty.
 - c. Humidity - 90% rated humidity non-condensing.
 - d. Cooling - forced air when required.
 - e. Digital display for:
 - 1) Running - output frequency, motor RPM, output current, voltage.
 - 2) Setting - Parameters values for setup and review.
 - 3) Trip - separate message for each trip, last thirty (30) trips to be retained in memory.
- 10. Protective Features:
 - a. Motor overspeed.
 - b. Adjustable current limit.
 - c. Isolated control circuitry.

- d. Digital display for fault conditions.
 - e. Selectable automatic restart at momentary power loss.
 - f. Manual restart.
 - g. Over/Under Voltage.
 - h. Line to line and line to ground faults.
 - i. Over-temperature.
- G. VVVF AC Drive - Regenerative Module - SAB1, LC1, STL1, HAB1 & HAB2, SUB3-SUB5, CSB1
- 1. The system shall provide full regenerative capabilities to control overhauling motor speed and reduce hoist motor deceleration time by allowing overhaul power to be discharged back into the power lines.
 - a. The regenerative section may be an integral part of the drive or a stand-alone unit mounted in a separate cabinet with proper ventilation as required by the manufacturer.
- H. Overspeed Governor - SAB1, LC1, STL1, HAB1 & HAB2, SUB3-SUB5, CSB1
- 1. Provide a speed governor, located overhead, to operate the car safety.
 - a. Maintain the proper tension in the governor rope with a weighted tension sheave located in the pit.
 - 1) Springs used to develop the tension are not acceptable.
 - b. Provide rope grip jaws, designed to clamp the governor rope to actuate the car safety upon a predetermined overspeed downward.
 - 1) The centrifugal type governor shall trip and set rope jaws within 60 degrees of governor sheave rotation after reaching rated tripping speed.
 - c. Design the governor rope tripping device so that no appreciable damage to or deformation of the governor rope shall result from the stopping action of the device in operating the car safety.
 - d. Provide an electrical governor overspeed protective device which shall remove power from the driving machine motor and brake before or at the application of the safety.
 - 1) The setting for the overspeed switch shall be as prescribed in the ASME A17.1 Safety Code.
 - 2) Locate and enclose the switch to ensure that excess lubrication will not enter the switch enclosure.
 - 3) Overspeed switch shall operate in both direction of travel on systems employing a static power drive unit.
 - e. Seal and tag the governor with the running speed, tripping speed and date last tested.
 - f. Design the governor to prevent false tripping due to conditions caused by rope dynamics.

- g. CSB1 - Governor shall be mounted to the guide rail system or machine beam supports in the hoistway overhead.
 - 1) Coordinate access requirements and testing procedures with the AHJ.
 - 2) Where governor access is not required by the AHJ, governor shall be capable of being manually reset from outside the hoistway.

I. Equipment Isolation - SAB1, LC1, STL1, HAB1 & HAB2, SUB3-SUB5, CSB1

- 1. Provide sound reducing vibration isolation elements at all support points of elevator controller, solid-state motor drives, isolation transformers, reactance units, hoisting motors and machines.
- 2. The elements for controllers, solid-state motor drives and isolation transformers shall be similar to double deflection neoprene-in-shear mounts, as manufactured by Mason Industries, Type ND, with 0.35" static deflection under design load ratings.
- 3. Elements between the hoisting machine unitized base and machine support beams shall be similar to triple layer ribbed neoprene pads, separated by appropriate steel shims as manufactured by Mason Industries, Type W pads, at 50 durometer, loaded for 40 psi or approved equal.
- 4. All bolts through isolation elements, where necessary, are to incorporate resilient washers and bushings.
- 5. Isolation of existing hoisting machine and motor is contingent on the OEM design of the apparatus.
 - a. Existing isolation pads shall be replaced with new.

J. Sound Reducing Protection - STL2, STL3

- 1. When operating in accordance with plans and specifications, the elevator equipment shall not generate noise levels in excess of NC-40 in occupied tenant spaces and shall be free of pure tones.
 - a. For the purpose of this specification, a pure tone shall be defined as a sound level in any one-third octave band which is greater than 5 dB above both adjacent one-third octave bands, in the range 45 to 11,200 Hz.
- 2. Provide the following treatments as a minimum.
 - a. Mount sound insulating panels, manufactured of reinforced 16 gauge steel panels with a 1" thick 1-1/2 lbs. core of fiberglass affixed to interior, on all four open sides of the power unit frame to isolate airborne noise from belt driven motor-pump assembly.
 - b. Install a minimum of two (2) sound isolating couplings in the oil line in the machine room between pump and jack.
 - 1) Each coupling shall consist of two (2) machined flanges separated by two (2) neoprene seals to absorb vibration and to positively prevent metal-to-metal contact in the oil line.
 - 2) Build coupling in such a manner that they will be absolutely blow-out proof.
 - c. Install an oil-hydraulic muffler in oil line near power unit.

- 1) The mufflers contain pulsation absorbing material inserted in a blow-out proof housing.
 - 2) Rubber hose without blow-out proof features will not be acceptable.
 - d. Provide sound reducing vibration isolation elements at all support points of elevator controllers and pump units.
 - 1) The elements shall be similar to double deflection neoprene-in-shear mounts, as manufactured by Mason Industries.
 - 2) All bolts through isolation elements, where necessary, are to incorporate resilient washers and bushings.
 - e. Locate the power unit at least one inch (1") from any walls.
 - f. Use flexible conduit with ground wire for pump unit connections.
- K. Overhead / and Governor Stop Switches – CSB1
 1. Provide a positive action stop switch at the following locations as required by applicable code:
 - a. Overhead machine/sheave space.
 - b. Overhead governor access panel or space as may be mandated by the AHJ.
 2. The switch shall be arranged to prevent the application of power to the hoist motor and machine brake when placed in the “OFF” position.
 - a. Clearly identify the switch with permanent marking on the switch cover that indicates “RUN” and “STOP” positions.
- L. Emergency Brake - SAB1, LC1, STL1, HAB1 & HAB2, SUB3-SUB5, CSB1
 1. Ascending Car Overspeed Protection Device
 - a. Provide a device designed to prevent an ascending elevator from striking the hoistway overhead structure.
 - b. The device shall decelerate the car with any load up to the rated capacity by applying an emergency brake.
 - 1) The device shall detect an ascending car overspeed condition of not greater than 10% higher than the speed that the car governor is set to trip.
 - 2) The device, when activated, shall prevent operation of the car until the device is manually reset.
 - 3) The device shall meet the requirements of the ASME A17.1 Safety Code as may be modified by the AHJ.
 2. Unintended Car Movement Protection Device
 - a. Provide a device to prevent unintended car movement away from the landing when the car and hoistway doors are not closed and locked.
 - 1) The device shall prevent such movement in the event of failure of:

- a) The electric driving machine motor.
 - b) The brake.
 - c) The machine shaft or shaft coupling.
 - d) Machine gearing.
 - e) Control system.
 - f) Any component upon which the speed of the car depends.
 - g) Suspension ropes and the drive sheave of the traction machine are excluded.
- 2) The device shall prevent operation of the car until the device is manually reset.
 - 3) The device shall meet the requirements of the ASME A17.1 Safety Code as may be modified by the AHJ.
3. Where the installation of the Emergency Brake involves the raising of existing hoisting machines or modifications to the machine room slab, the contractor shall provide necessary engineering data, structural review and drawings as part of the submittal process.

M. Hydraulic Pump Motor - STL2, STL3

1. Provide an alternating current induction motor having a maximum speed of 1800 RPM, designed to operate at 120 starts per-hour and a continuous rated 50 degrees C temperature rise.

N. Hydraulic Power Unit / Motor - STL2, STL3

1. Provide a self-contained power unit which includes:
 - a. Structural steel outer base.
 - b. Tank support.
 - c. Oil tight drip pan.
 - d. Floating inner base to prevent metallic contact for mounting the motor pump assembly.
 - e. Sound isolation panels to enclose the unit and reduce airborne noise.
2. Provide a reinforced overhead oil reservoir with a tight fitting tank over the oil control unit which includes:
 - a. An oil fill strainer with air filter.
 - b. An oil level gauge assembly.
 - c. A self-cleaning strainer in the suction line.
3. The pump shall be for oil hydraulic elevator service with positive displacement screw type design for steady discharge with minimum vibration.
4. The drive shall be by multiple V-Belts and sheaves or directly driven by a submersible pump depending on the HP requirements of the system.
 - a. The use of submersible pumps having more than a 40 HP motor is unacceptable.
5. Pump drive motor control shall utilize solid state motor starter circuitry to provide reduced current starting and maximum protection of the motor.

6. The oil control unit shall be of the manufacturer's own design and shall include solid state motor starter technology or variable frequency motor control as well as relief, safety check valves and an electronic modulated oil control valve. The electronic valve shall:
 - a. Provide continuous short travel curve, independent of load and temperature.
 - b. Provide smooth acceleration and deceleration regardless of the load.
 - c. Maintain velocity control over a wide range of oil temperatures.
 - d. Allow the manual lowering of the elevator car in event of power failure and for use in servicing and adjusting the elevator mechanism.
 - e. Design the tank shut-off valve for isolating oil in the power unit tank to ensure each of servicing and adjusting the elevator mechanism without removing oil from the tank.
 7. Manufacture the unit to operate under 700 psi (for submersible units) working pressure.
 8. When the oil reservoir thermostat registers 50 degrees F, the car shall "exercise" until the oil temperature reaches 75 degrees F.
- O. Hydraulic Piping - STL2, STL3
1. Provide all necessary pipes and fittings to connect the power unit to the jack.
 - a. Use minimum Schedule 80 steel pipe.
 - b. Provide a shut off valve in the machine room for maintenance service.
 2. For remote machine rooms, run the hydraulic pipe in a trench provided by others.
 - a. The pipe shall be welded and wrapped with a protective tape coat.
 - b. Enclose the pipe in a schedule 40 PVC sleeve which shall run from the machine room to the hoistway.
 3. The oil pipe and conduit shall be overhead above suspended ceiling.
 - a. Exact location must be coordinated with other trades.
 - b. For pipe hangers use spring hangers Type 30 of Mason Industries, Inc. or approved equal.
 - c. Provide neoprene isolation pads between the pipe and the hangers.
 4. Adequately support the full run of pipe with isolation type support.
 5. Where flexible hose and fitting assemblies, and flexible couplings are used for hydraulic connections, flexible hose and fitting assemblies shall:
 - a. Not be installed within the hoistway, nor project into or through any wall.
 - b. Installation shall be accomplished without introducing twist in the hose, and shall conform with the minimum bending radius of SAE 100 R2 type, high pressure, steel wire reinforced, rubber covered hydraulic hose specified in SAE J517.
 - c. Have a bursting strength sufficient to withstand not less than ten (10) times the working pressure.
 - d. Be permanently marked indicating:
 - 1) Manufacturer of the hose and fittings.
 - 2) Type of hose and fitting.

- 3) Minimum factory test pressure.
- 4) Minimum bending radius of the hose.
- 5) Date of installation.
- 6) Inspection procedure.
- 7) Name of elevator trade.

P. Hydraulic Mainline Oil Strainer - STL2, STL3

1. Provide a mainline hydraulic oil strainer of the self-cleaning, compact type, equipped with a 40 mesh element and installed in the oil line.
2. Design the strainer for maximum system working pressure.

Q. Hydraulic Oil Cooler - STL2, STL3

1. Provide a thermostatically controlled industrial standard oil-air heat exchanger, sized and designed to maintain a maximum oil temperature of 100 degrees F.
2. The oil cooler shall contain the following components mounted on a unit-frame:
 - a. A heat exchanger.
 - b. A three-phase motor driving a screw pump to circulate the oil through the heat exchanger.
 - 1) The screw pump motor shall operate from a power source matching the main power unit pump motor thereby eliminating the need of a separate power feeder.
 - c. A low-noise cooling fan designed to obtain the maximum cooling capacity of the unit.
3. Provide a separate disconnect for the oil cooler pump and fan to facilitate servicing.
4. The maximum noise level of the oil cooler assembly shall not exceed 50 dBA.

2.6 HOISTWAY EQUIPMENT

A. Guide Rails / Inserts / Brackets – CSB1

1. Provide machined, standard size steel “T” section guide rails with tongue and grooved joints for the car and counterweight. Use not less than 15.0-pound car rails. Size rails to span maximum vertical distance between supports as noted on the drawings.
 - a. Saveria Super Line, Monteferro S or approved equal.
2. Use not less than 3/4" thick machined steel fishplates to form rail joints. Connect rails to fishplate with four (4) bolts.
3. The section modulus and moment of inertia of the fishplates shall not be less than that of the rail.
4. For concrete and concrete block hoistways furnish rail brackets and provide inserts and an insert location drawing to Contractor.
5. Brackets shall be used to support the rails from the hoistway framing and/or inserts.
 - a. The rails shall be attached to the brackets by heavy clamps or clips.
 - b. Bolting or welding rails to brackets shall only be allowed in certain instances.
 - c. Do not attach brackets to the top flange of hoistway framing steel.

6. Provide rail backing where the vertical distance between support framing is greater than 14'-0" and no intermediate support framing is shown on the drawing.
 7. All guide rails shall be erected plumb and parallel to a maximum deviation of 1/8 inch (plus or minus 1/16 inch).
 8. Provide oversized steel members and brackets for the rails where the distances exceed the manufacturer's standard dimensions.
- B. Guide Rails / Inserts / Brackets (Reuse) - SAB1, LC1, STL1, HAB1 & HAB2, SUB3-SUB5, STL2, STL3
1. Car and counterweight guide rails, fishplates, rail brackets, backing support and related attachments shall be inspected to determine if unfavorable conditions exist that diminish the structural integrity of any component.
 - a. In the event substandard conditions are disclosed by means of this inspection, the Contractor shall immediately inform the Consultant as to the exact nature of said problems and then undertake whatever repairs and/or replacements the Consultant may deem appropriate to remedy the situation.
 2. Each stack of guide rails shall be individually examined to determine if excessive compression has occurred from building settlement.
 - a. In the event such conditions are found to exist, each affected stack shall be cut off enough to relieve pressure.
 - b. Jacking bolts shall be provided underneath each stack of both car and counterweight guide rails.
 3. Each stack of guide rails shall be realigned so that total deviation from plumb in any direction does not exceed 1/8" over the entire length of the hoistway and that DBG (distance between guide rails) measurements never vary more than .030".
 4. As required, car guide rails joints shall be individually filled, filed and sanded in order to eliminate minor variations in adjoining machined surfaces.
- C. Counterweight Assembly (Reuse) - SAB1, LC1, STL1, HAB1 & HAB2, SUB3-SUB5
1. The existing counterweight assembly shall be refurbished to as new condition and reused.
 2. Individual counterweight frame members shall be inspected for any indication of damage and to determine if the overall assembly is twisted, racked, or otherwise distorted.
 - a. All fastenings between counterweight frame members shall be individually examined, tightened and if necessary renewed.
 - b. In case any of these conditions are found to exist, the Contractor shall immediately inform the Consultant about the exact nature of the problem and undertake whatever corrective action the Consultant may deem appropriate to remedy the situation.
 3. The amount of filler weight placed within the counterweight frame shall be adjusted so the weight of the entire counterweight assembly is equal to that of the renovated elevator car, plus forty to forty-two percent (40-42%) of its rated loading capacity unless otherwise required by a manufacturer where new hoisting machinery is employed.

- a. Filler weights shall be held securely in place at all times with tie rods passing through holes in both the weights and the counterweight frame with tie rods secured on each end with double lock nut and a cotter pin arrangement.

D. Roller Guides – All Elevators

1. Provide roller guide shoes with adjustable mounting base, rigidly bolted to the top and bottom of each side of the car and counterweight frame.
 - a. Roller guides shall consist of a set of sound reducing neoprene wheels in precision bearings held in contact with the three (3) finished rail surfaces by adjustable stabilizing springs.
 - b. The bearings shall be sealed or provided with grease fittings for lubrication.
 - c. Equip roller guides with adjustable stops to control postwise float.
 - d. Fit the top car roller guides with galvanized, painted or powder coated steel guards.
2. Approved applications and manufacturers:
 - a. ELSCO Model B for car roller guides and ELSCO Model D for counterweight guides, or approved equal.
3. Roller guides shall not be installed on counterweight frames where traveling buffers with separate guide shoes are employed and lubrication of the rails is necessary for proper guide operation.
4. Roller guides shall not be installed on counterweight frames where counterweight safeties are employed and prevailing conditions prohibit installation due to limitations in clearances or in cases where rollers will interfere with the operation of the safety plank.

E. Hoist Ropes - SAB1, LC1, STL1, HAB1 & HAB2, SUB3-SUB5, CSB1

1. Pre-formed traction steel wire rope, specifically constructed for elevator applications, shall be provided for suspension of the elevator car and counterweight assembly.
 - a. Fastenings shall be accomplished by use of individual tapered rope sockets (wedge clamp) with adjustable shackles.
 - b. General design requirements for rope shackles and the method of securing wire rope shall conform with ASME A17.1 elevator safety code.
 - c. Provide machine-room-less elevators with hoist ropes having steel core.
 - d. Properly select rope for the application and compatibility with the machine drive sheave hardness and groove profile. Design shall provide for a minimum service life of ten (10) years and shall be substantiated by calculations during the submittal phase.
2. New ropes shall be identical in number and construction to those which are currently in use.
3. New rope shackles shall be provided.
4. Existing hitch plates shall be inspected for wear. Hitch plates with elongated holes or other conditions that may damage shackles shall be replaced with new.
5. Provide anti-spinout as required by applicable code at all shackles where applicable.

F. Governor Rope - SAB1, LC1, STL1, HAB1 & HAB2, SUB3-SUB5, CSB1

1. Pre-formed wire rope specifically constructed for elevator applications, shall be provided for governor ropes.
 - a. Rope shall be traction steel or iron in accordance with OEM design requirements.
 - b. Rope diameter and method of fastening shall be in accordance with ASME A17.1 Safety Code as adopted and/or otherwise modified by the AHJ.

G. Electrical Conduit / Wiring / Traveling Cable - All Elevators

1. Electrical wiring shall be provided.
 - a. All wiring shall be stranded copper conductors, manufactured in compliance with ANSI/ASTM B174-71 and UL 62 requirements, and polyvinyl chloride insulation complying with ETT requirements of UL 62 and Article 400 of the National Electric Code.
 - b. Electrical wiring provided for hoistway interlock shall be of a flame retardant type, capable of withstanding temperatures of at least 392 degrees Fahrenheit. Conductors shall be Type SF or equivalent.
 - c. Each run of electrical conduit or duct shall contain no less than 10% spare wires and, in any case, no fewer than two (2) spare wires.
 - d. Crimp-on type wire terminals shall be used where possible.
2. Traveling cable shall be provided.
 - a. Each traveling cable shall be provided with a flame and water resistant polyvinyl chloride jacket.
 - b. Electrical wiring shall consist of stranded copper conductors, manufactured in compliance with ANSI/ASTM B174-71 and UL 62 requirements, and polyvinyl chloride insulation complying with ETT requirements of UL 62 and Article 400 of the National Electric Code.
 - c. Each traveling cable shall contain no less than 10% spare wires.
 - d. Traveling cable exceeding 100' in length shall be provided with a steel wire rope support strand from which the cable shall be suspended.
 - e. Traveling cable must be contained within an approved electrical conduit to within 6' of the final suspension point in the hoistway.
 - f. Each traveling cable shall be arranged to provide no fewer than six (6) individually shielded pairs of 20 gauge wire and arranged to contain no less than one (1) coaxial cable for CCTV remote monitoring.
 - g. Traveling cable conductors that terminate at a hoistway center box shall be connected to stud blocks provided for that purpose.
 - 1) Each wiring terminal shall be clearly identified by its nomenclature as shown on the "as built" wiring diagrams and solderless, crimp-on type wire terminals shall be used where possible.
 - h. The attachment of a traveling cable to the underside of the elevator car shall be performed so that a minimum loop diameter of 30x the cable diameter is provided.
 - i. Pre-hang the cables for at least twenty-four (24) hours with ends suitably weighted to eliminate twisting during operation.

3. Conduit and Troughs to be as per specification section 260533.

H. Normal and Final Terminal Stopping Devices - All Elevators

1. Provide normal terminal stopping devices to stop the car automatically from any speed obtained under normal operation within the top and bottom overtravel, independent of the operating devices, final terminal stopping device and the buffers.
2. Provide final terminal stopping devices to stop the car and counterweight automatically from the speed specified within the top clearance and bottom overtravel.
3. The terminal stopping devices shall have rollers with rubber or other approved composition tread to provide silent operation when actuated by the cam fixed to the top of the car.
 - a. Terminal stopping devices that are not mechanically operated (i.e.: magnetic proximity) shall be provided by the manufacturer of the control equipment, intended for use as a terminal limit, and designed for reliable operation in the hoistway environment.
4. Final terminal limits shall be pinned so as to prevent movement after final adjustment.

2.7 PIT EQUIPMENT

A. Car and Counterweight Buffers (New) - All Elevators

1. Provide buffer with necessary blocking and horizontal steel braces under the car and counterweight.
2. Provide spring type buffers for elevators with operating speeds of up to and including 200 fpm.
3. Use oil buffers for elevators with operating speeds over 200 fpm.
4. Oil buffer shall bring the car and counterweight to rest from governor tripping speed at an average rate of retardation not exceeding gravity (32 ft/s²).
5. Oil buffer shall be of the spring return type and shall have means of checking oil supply level.
6. Use reduced stroke buffer with associated terminal slowdown devices where runby is restrictive.
 - a. Buffer and emergency terminal slowdown device shall operate in accordance with applicable codes.
7. The buffer shall be tested and approved by a qualified testing laboratory.
8. Provide a permanent buffer marking plate which indicates the manufacturer's name, identification number, rated impact speed and stroke.
9. Provide a permanent data plate in the vicinity of the counterweight buffer indicating the maximum designed counterweight runby.
10. Support buffers from the pit floor level with all required blocking and bracing steel members.
11. Coordinate the installation of the buffer inspection platform and ladder with the Architect.

B. Governor Rope Tension Assembly - SAB1, LC1, STL1, HAB1 & HAB2, SUB3-SUB5, CSB1

1. Provide a governor rope tension assembly.

- a. Maintain the proper tension in the governor rope with a weighted tension sheave located in the pit.
 - 1) Springs used to develop the tension are not acceptable.
- b. The sheave shall be of proper diameter and set directly plumb with the governor rope drop to prevent the rope from pulling off of the sheave at an angle.
- c. Lubrication fittings shall be provided on the assembly.
- d. The assembly shall have necessary rope guards to prevent accidental contact of the rope/sheave by service personnel and to prevent the governor rope from jumping off of the sheave.

C. Jack Unit (Reuse) - STL2, STL3

1. The existing jack shall be reused.
2. The jack shall undergo the following work:
 - a. Check plunger for smooth surface and eliminate burrs where necessary.
 - b. Verify plunger sections are securely attached with minimum seam.
 - c. Check stop-ring for proper fit.
 - d. Renew internal babbitt-lined, guide bearing, packing or seals where necessary.
 - e. Clean drip ring around cylinder top to provide adequate drainage.
 - f. Check mounting hardware and welds where applicable.
 - g. Check secure attachment of head.
 - h. Remove rust and apply rust inhibiting paint.
3. Perform static load test of the jack unit to determine if there are any failures of the cylinder wall.
4. Where double-walled cylinders are not provided, and where prevailing conditions allow, install a plunger gripper to prevent freefall of the elevator in the event of a catastrophic failure of the hydraulic jack.

D. Scavenger Pump - STL2, STL3

1. Provide a positive displacement, rotary type pump for the hydraulic elevator.
 - a. The pump shall have a 1/3 HP motor capable of pumping 100 ft. vertically.
 - b. The pump shall be self-priming and self-lubricating.
 - c. The pump shall be equipped with a 100 mesh screen strainer.
 - d. The pump housing shall be constructed of brass with stainless steel internal parts, and shall have a 3.5-gallon reservoir.
2. Mount oil return pump off the pit floor and connect it to the jack unit and the oil tank with copper tubing.

E. Hydraulic Check Valve - STL2, STL3

1. A check valve shall be provided and installed so that it will hold the elevator with rated load at any point when the pump stops and the down valves are closed or the maintained pressure drops below the minimum operating pressure.

F. Overspeed (Rupture) Valve - STL2, STL3

1. Where required by Code, an overspeed valve shall be provided and installed so that it will cause the flow of oil from the hydraulic jack through the pressure piping to cease when such flow exceeds a preset value relative to car speed in accordance with applicable codes.

G. Pit Stop Switch - All Elevators

1. Where pit depth does not exceed 67", each elevator pit shall be provided with a push/pull or toggle switch that is conspicuously designated "EMERGENCY STOP" and located so as to be readily accessible from the hoistway entrance on the lowest landing served at a height of approximately 18" above the floor.
 - a. This switch shall be arranged to prevent the application of power to the hoist motor and machine brake when placed in the "OFF" position.
2. Where climb-in pit depth exceeds 67", each pit shall be provided with two (2) push/pull or toggle switches conspicuously designated "EMERGENCY STOP".
 - a. Both of these stop switches, shall be located immediately adjacent to the pit access ladder.
 - 1) Place one stop switch approximately 47" above the pit floor.
 - 2) Place the second stop switch 18" above the hoistway entrance sill on the lowest landing served.
 - 3) These switches shall be arranged so as to prevent the application of power to the hoist motor or machine brake when either one is placed in the "OFF" position.
3. Where a walk-in pit exists, each elevator shall be provided with a push/pull or toggle switch that is conspicuously numbered and designated "EMERGENCY STOP".
 - a. The location of this stop switch shall be approximately 47" above the pit floor at the nearest point of pit entry from the access door.
 - b. This switch shall be arranged so as to prevent the application of power to the hoist motor and machine brake when placed in the "OFF" position.
4. Provide an electric contact safety switch for the pit access door if any equipment attached to the car extends within the space of the hoistway pit when the car is level at the bottom terminal landing.
 - a. Opening the pit access door shall cause the electric contact switch to stop the elevator by interrupting electric power to the driving machine and brake.
 - b. Provide a sign on the pit door "**WARNING – OPENING OF PIT DOOR WILL STOP ELEVATOR**" using lettering a minimum of two (2) inches high.
5. Existing stop and/or pit door switch conforming to the requirements set forth herein may be refurbished to as new condition and reused subject to approval of the Consultant.

2.8 HOISTWAY ENTRANCES

A. Hoistway Entrances (Reuse)

1. Hoistway entrance sills, sill supports, entrance frames, headers and header supports shall be reused and refurbished.
 - a. Hoistway entrances that have become distorted or bent shall be straightened, plumbed, reset to the proper width dimension and reinforced as necessary.
 - b. Provide 14-gauge steel fascia plates that extend at least the full width of the door and be secured at hanger support and sill with oval head machine screws.
 - 1) Reinforce fascia to allow not more than ½" of deflection.
 - 2) Provide fascia plates where the clearance between the edge of the loading side of the platform and the inside face of the hoistway enclosure exceeds the code allowed clearance.
 - c. Provide 14-gauge steel toe guards that extend 12" below any sill not protected by fascia.
 - 1) The toe guards shall extend the full width of the door and shall return to the hoistway wall at a 15-degree angle and be firmly fastened.
 - d. Remove oil, dirt and impurities on new and existing apparatus and give a factory coat of rust inhibitive paint to all exposed surfaces of struts, hanger supports, covers, fascias, toe guards, dust covers and other ferrous metal.

B. Slide Type Hoistway Door / New in Existing Frame

1. Provide a new elevator hoistway entrance door reusing existing entrance frame.
2. Each new door shall be as follows:
 - a. Hollow metal construction.
 - b. 1-1/2-hour fire-rated test approved with required label.
 - c. Manufactured of cold rolled furniture steel.
 - d. Flush design both sides.
 - e. Rigidly reinforced.
 - f. Sound deadened.
3. Where conditions warrant, and where otherwise required by code, equip all hoistway landing doors with one-piece full height non-vision wings of material and finish to match hall side of door panels.
4. Provide each door panel with two (2) removable laminated plastic composition guides, arranged to run in existing sill grooves with a minimum clearance.
 - a. The guide mounting shall permit their replacement without removing the door from the hangers.
 - b. A steel fire stop shall be enclosed in each guide.
5. Provide the meeting edge of center opening doors with necessary new continuous rubber astragal bumper strips.
 - a. Astragal shall be relatively inconspicuous when the doors are closed.

- b. Provide rubber bumpers at the top and bottom of each section of door to stop them at their limit of travel in the opening direction.
 - 6. In multi-speed door arrangements, provisions shall be made to interlock the individual panels so all panels close should the normal door panel relating means fail.
 - 7. Provide a special key so that an authorized person can open any landing door when the car is elsewhere.
 - a. The key hole shall be not less than 3/8" in diameter and shall be fitted with a stainless steel or bronze ferrule to match related equipment.
 - 8. Finish all door panels in baked enamel as selected by the owner/architect.
 - 9. Where conditions require, provide necessary new masonry around existing entrance frames to maintain fire rating. Painting or other wall surface decorating will be per Division 09.
- C. Tracks / Hangers / Closers / Related Equipment - All Elevators
- 1. Formed or extruded steel landing door hanger tracks shall be provided.
 - 2. Each landing door panel shall be suspended from a pair of door hanger assemblies that are compatible with the hanger tracks.
 - a. Hanger assemblies shall be directly mounted to the door panel using 3/8" diameter or better hardware.
 - b. Solid steel blocks shall be used where job-site conditions dictate the use of spacers between hanger assemblies and the landing door panel.
 - c. Hanger assemblies shall be adjusted or shimmed so that door panels are suspended in a plumb manner with no more than 3/8" vertical clearance to the cab entrance threshold.
 - d. Upthrust rollers shall be adjusted for minimal operating clearance against the bottom edge of the hanger track.
 - e. Means shall be provided to prevent hangers from jumping the track.
 - f. Blocks shall be provided to prevent rollers from overrunning the end of the track.
 - 3. Each set of center opening landing doors shall be provided with a cable driven relating mechanism which is compatible for use with the door hanger assemblies.
 - a. The relating mechanism shall be properly tensioned and adjusted so as to equalize the relationship between the door panels and the hoistway entrance.
 - 4. Each set of multi-speed center opening or side slide landing doors shall be provided with a sill-mounted spring closing mechanism with necessary door panel relating hardware.
 - 5. In multi-speed door arrangements, provisions shall be made to interlock the individual panels so all panels close should the normal door panel relating means fail.
 - 6. Each set of single speed side slide landing doors shall be provided with a sill-mounted spring closing mechanism.
 - a. Spirator-type spring closers shall be acceptable should prevailing sill depth or runby clearance conditions require their use.

7. Where applicable, each hoistway door interlock assembly shall be provided with an emergency release mechanism utilizing manufacturers' standard type access key at all landings served.
 - a. Drill each hoistway door to accommodate manufacturers standard lock release key and install escutcheon.
 - 1) Escutcheon shall be brushed stainless steel to match door panels where required.
 - 2) Aluminum shall be provided at all other typical floors.
8. Where multi-speed side slide door panels exist, provide a secondary interlocking device that will prevent separation of the panels should the sill closer or relating cable(s) fail.

D. Interlocks / Unlocking Devices - All Elevators

1. Each set of landing doors shall be provided with a complete electromechanical interlock assembly.
 - a. Each interlock assembly shall consist of:
 - 1) A switch housing with contacts.
 - 2) Lock keeper.
 - 3) Clutch engagement/release subassembly.
 - 4) Associated linkages.
 - b. Arrange the lock so that individual leading door panels (side slide or center opening) are locked when in the closed position.
2. Non-typical mounting arrangements for interlocks and/or related mechanisms must receive prior approval from the Consultant.
3. Each hoistway door interlock assembly shall be provided with an emergency release mechanism utilizing a drop-leaf type access key at all landings served.
 - a. Each hoistway door shall accommodate manufacturers standard lock release key with escutcheon.
 - 1) The key hole shall be fitted with a metal ferrule that matches the door finish.

E. Hoistway Door Bottom Guides / Safety Retainers - All Elevators

1. The bottom of each side sliding type hoistway door panel shall be equipped with a minimum of two (2) guiding members.
 - a. Metal mounting angles shall be secured to the integral panel frame structure; and when conditions warrant, additional external metal support plates or angles shall be installed to ensure the integrity of the panel frame is not compromised.
 - b. Guides shall be manufactured of low friction non-metal material with sufficient strength to withstand forces placed on door panels per ASME A17.1 Standards.

- c. Each guide assembly shall incorporate a steel wear indicator and be so designed to permit sliding member replacements without removal of door panel(s) from top hanger devices.
 - d. Panels shall be hung with a maximum vertical clearance of 3/8 inch between top of sill and bottom of panel and the guide shall engage the sill groove by not less than 1/4 inch.
- 2. The bottom of each side sliding type hoistway door panel shall be equipped with a guiding member safety retainer to prevent displacement in the event of primary guide means failure.
 - a. A metal reinforcement (12 gauge stainless or galvanized steel) shall be installed between the two (2) primary guiding members (a.k.a. "Z" bracket).
 - b. The reinforcement shall be designed with a minimum length of eight (8) inches or the maximum possible length that will fit between the primary members and a minimum overall height of two and one-half (2.5) inches secured on the internal face of the door panel. (Hoistway side)
 - c. The retainer shall be set with the supplemental safety angle 3/8 inch into the corresponding sill groove; and be capable of preventing displacement of the panel no more than 3/4 inch with an applied force of 1125 lbf at right angles over an area twelve (12) inches x twelve (12) inches at the approximate center of the door panel.

2.9 CAR EQUIPMENT / FRAME

A. Car Frame (Reuse) - All Elevators

- 1. The existing car frame assembly shall be refurbished to as new condition and reused.
- 2. Individual car frame members, platform isolation framework, door operator support structure, related bracing and hardware shall be inspected for any indication of damage or distortion.
 - a. Where damage is detected, the Contractor shall immediately inform the Consultant and then undertake corrective action deemed appropriate by the Consultant to remedy the condition.
- 3. Provide new elastomer isolation pads for all existing platforms where pads are presently installed.
- 4. The car frame, door operator support and related bracing shall be modified or reconfigured as necessary in order to accommodate new cab enclosure and/or master door operating equipment specified herein.
- 5. The elevator car shall undergo static balancing upon substantial completion of all work described in the project specifications and subsequent to any car interior refinishing or cab replacement work performed in conjunction with the project.

B. Car Platform (Reuse) - All Elevators

- 1. The existing platform shall be modified to accommodate the new apparatus specified herein.

- a. Where necessary, the underside of platform shall be refurbished and treated with fire-rated material.
- b. Top of platform shall be refurbished with a marine grade plywood set to receive new finished floor covering.
- c. Where necessary, provide a new safety access hole ring and cover assembly to match selected cab finishes.
- d. At Contractor's option or when conditions warrant, provide a totally new platform in lieu of repairs, modifications and upgraded specified above.

C. Car Safety – CSB1

1. Provide a governor actuated mechanical safety device mounted under the car platform and securely bolted to the car sling.
2. The car safety shall be sized for the capacity and speed noted herein.
 - a. When tripped, the safety mechanism shall engage the rails with sufficient force to stop a fully loaded car with an average rate of retardation within the limits given in A17.1 Safety Code.
3. Install a car safety marking plate of corrosion resistant metal and, in addition to the data required by Code, indicate the manufacturer's name and manufacturer's catalog designation number for safety.
4. Make provisions to release the car safety. In no event shall the safety be released by downward motion of the car. Raising the car to reset the safety shall be allowed.
5. Provide an electrical safety plank switch that will interrupt the power to the hoist machine and apply the machine brakes when the safety is set.

D. Car Safety (Reuse) - SAB1, LC1, STL1, HAB1 & HAB2, SUB3-SUB5

1. The existing governor actuated car safety device shall be retained, overhauled and upgraded for current code compliance.
2. Readjust safety for proper operation in accordance with current ASME A17.1 design standards.
3. Check the existing safety operated switch (plank-switch) for proper adjustment and operation.
 - a. Provide a new plank-switch where none currently exists.
4. A new safety shall be provided where the existing is not suitable for reuse due to overall condition or in conjunction with an increase in the elevator speed or full load capacity.

E. Automatic Leveling / Releveling / Positioning Device - All Elevators

1. Equip the elevator with a floor leveling device which shall automatically bring the car to a stop within 1/4" of any floor for which a stop has been initiated regardless of load or direction of travel.
2. This device shall also provide for releveling which shall be arranged to automatically return the elevator to the floor in the event the elevator should move below or above floor level in excess of 1/4".
3. This device shall be operative at all floors served and whether the hoistway or car door is open or closed provided there is no interruption of power to the elevator.
4. A positioning device shall be part of the controller microprocessor systems.

- a. Position determination in the hoistway may be through fixed tape in the hoistway or by sensors fitted on each driving machine to encode and store car movement.
 - b. Design the mechanical features and electrical circuits to permit accurate control and rapid acceleration and retardation without discomfort.
5. Where there are consecutive floors/stops that are short stops, the system shall be capable of distinguishing between the two landing zones without error.
6. All equipment and logic required for leveling system to properly function with short stops shall be included.

F. Top-of-Car Inspection Operating Station - All Elevators

1. An inspection operating station shall be provided on top of the elevator car.
2. This station shall be installed so that the controls are plainly visible and readily accessible from the hoistway entrance without stepping on the car.
3. When the station is operational, all operating devices in the car shall be inoperative.
4. Provide the following control devices and features:
 - a. A push/pull or toggle switch designated "EMERGENCY STOP" shall be arranged so as to prevent the application of power to the hoist motor or machine brake when in the "off" position.
 - b. A toggle switch designated "INSPECTION" and "NORMAL" to activate the top of car Inspection Service Operation.
 - c. Push button designated "Up", "Down" and "Enable" to operate the elevator on Inspection Service (the "Enable" button shall be arranged to operate in conjunction with either the "Up" or "Down" button).
 - d. An indicator light and warning buzzer that are subject to activation under Phase I - Fire Emergency Recall Operation.

G. Load Weighing Device - All Elevators

1. Provide means to measure the load in the car within an accuracy of $\pm 4\%$ of the elevator capacity.
2. Provide one of the following types of devices:
 - a. A device consisting of four (4) strain gauge load cells located at each corner of the car platform and supporting a free floating car platform and cab with summing circuits to calculate the actual load under varying conditions of eccentric loading.
 - b. A strain gauge device located on the crosshead, arranged to measure the deflection of the crosshead and thus determine the load in the car.
 - c. A device consisting of four (4) strain gauge load cells, supporting the weight of the elevator machine with summing circuits to calculate the actual load under varying conditions of load.
 - d. A device to measure the tension in the elevator hoist ropes and thus determine the load in the car.
3. Arrange that the output signal from the load weighing device be connected as an input to the signal and motor control systems to pre-torque of the hoisting machine motors where applicable.
4. Provide audible and visual signals in connection with the load weighing device when used as an "overload" device.

H. Car Enclosure Work Light / Receptacle - All Elevators

1. The top and bottom of each car shall be provided with a permanent lighting fixture and 110 volt GFI receptacle.
2. Light control switches shall be located for easy accessibility from the hoistway entrance.
3. Where sufficient overhead clearance exists, the car top lighting fixture shall be extended no less than 24" above the crosshead member of the car frame.
4. Light bulbs shall be guarded so as to prevent breakage or accidental contact.

I. Emergency Exits / Top - All Elevators

1. Ensure they operate as per code and have proper electrical contacts and mechanical locks on the exterior of the cab enclosure.
2. The top of car emergency exit shall be so arranged that it can be opened from within the car by means of a keyed spring-return cylinder-type lock having not less than a five-pin or five-disk combination and opened from the top of the car without the use of a key.
3. No other key to the building shall unlock the emergency exit lock except access switch keys which may be keyed alike.
 - a. Keys shall be assigned in accordance with ASME A17.1 Group 1 Security requirements.
4. Seismic Zone 2 - The top emergency exit shall be provided with an electric contact so located as to be inaccessible from the inside of the car. The opening of the electrical contact shall limit the car speed to not more than 150 ft/min (0.76 m/s).

J. Master Door Power Operator System – VVVF/AC - All Elevators

1. Provide a heavy-duty master door operator on top of the elevator car enclosure for power opening and closing of the cab and hoistway entrance door panels.
2. The operator may be of the pivot/lever or belted linear drive type.
3. Operator shall utilize an alternating current motor, controlled by a variable voltage, variable frequency (VVVF) drive and a closed-loop control with programmable operating parameters.
 - a. System may incorporate an encoder feedback to monitor positions with a separate speed sensing device or an encoderless closed-loop VVVF-AC control to monitor motor parameters and vary power applied to compensate for load changes.
4. The type of system shall be designated as a high speed operator, designed for door panel opening at an average speed of two (2.0) feet per second and closing at approximately one (1.0) foot per second.
 - a. Reduce the closing speed as required to limit kinetic energy of closing doors to within values permitted by ASME A17.1.
5. The door shall operate smoothly without a slam or abrupt motion in both the opening and closing cycle directions.
 - a. Provide controls to automatically compensate for load changes such as:

- 1) Wind conditions (stack effect).
 - 2) Use of different weight door panels on multiple landings.
 - 3) Other unique prevailing conditions that could cause variations in operational speeds.
- b. Provide nudging to limit speed and torque in conjunction with door close signaling/closing and timing devices as permitted by ASME A17.1. Nudging shall be initiated by the signal control system and not from the door protective device.
6. In case of interruption or failure of electric power from any cause, the door operating mechanism shall be so designed that it shall permit emergency manual operation of both the car and corridor doors only when the elevator is located in the floor landing unlocking zone.
 - a. The hoistway door shall continue to be self-locking and self-closing during emergency operation.
 - b. The door operator and/or car door panel shall be equipped with safety switches and electrical controls to prevent operation of the elevator with the door in the open position as per ASME A17.1 Code Standards.
 - c. Provide zone-lock devices as required by ASME A17.1 as may be adopted and/or otherwise modified by the AHJ.
7. Construct all door operating levers of heavy steel or reinforced extruded aluminum members.
8. Belts shall be designed for long life and operate noise free.
9. All components shall be designed for stress and forces imposed on the related parts, linkages and fixed components during normal and emergency operation functions.
 - a. All pivot points, pulleys and motors shall have either ball or roller-type bearings, oilite bronze bushings or other non-metallic bushings of ample size.
10. Provide operating data / data tag permanently attached to the operator as required by applicable code and standards.

K. Car Door Panel(s) (New)

1. Provide standard 1" thick, 14-gauge hollow metal flush construction panel(s), reinforced for power operation and insulated for sound deadening.
2. Paint the hoistway side of each panel black and face the cab side with 16-gauge sheet steel matching the existing returns.
3. The panels shall have no binder angles and welds shall be continuous, ground smooth and invisible.
4. Drill and reinforce panels for installation of door operator hardware, door protective device, door gibs, etc.
 - a. Provide each door panel with two (2) removable laminated plastic composition guides, arranged to run in the sill grooves with minimum clearance.
 - b. The guide mounting shall permit their replacement without removing the door from the hangers.

5. Provide the meeting edge of center opening doors with necessary continuous rubber astragal bumper strips.

- a. These strips shall be relatively inconspicuous when the doors are closed.

L. Door Reopening Device - All Elevators

1. Provide an infrared curtain door protection system.
2. The door shall be prevented from closing and reopen when closing if a person interrupts any one of the light rays.
3. The door shall start to close when the protection system is free of any obstruction.
4. The infrared curtain protective system shall provide:
 - a. Protective field not less than 71" above the sill.
 - b. Where a horizontal infrared light beam system is used:
 - 1) A minimum of forty-seven (47) light beams.
 - 2) Accurately positioned infrared lights to conform to the requirements of the applicable handicapped code.
 - c. Modular design to permit on board test operation and replacement of all circuit boards without removing the complete unit.
 - d. Controls to shut down the elevator when the unit fails to operate properly.
5. Existing infrared door protection systems, designed in accordance with the criteria specified herein, may be retained and refurbished for new subject to the Consultant's review and approval.

2.10 FINISH / MATERIALS / SIGNAGE

A. Material, Finishes and Painting - All Elevators

1. General
 - a. Cold-rolled Sheet Steel Sections: ASTM A366, commercial steel, Type B
 - b. Rolled Steel Floor Plate: ASTM A786
 - c. Steel Supports and Reinforcement: ASTM A36
 - d. Aluminum-alloy Rolled Tread Plate: ASTM B632
 - e. Aluminum Plate: ASTM B209
 - f. Stainless Steel: ASTM A167 Type 302, 304 or 316
 - g. Stainless Steel Bars and Shapes: ASTM A276
 - h. Stainless Steel Tubes: ASTM A269
 - i. Aluminum Extrusions: ASTM B221
 - j. Nickel Silver Extrusions: ASTM B155
 - k. Bronze Sheet: ASTM B36(36M) alloy UNS No. C2800 (Muntz Metal)
 - l. Structural Tubing: ASTM A500
 - m. Bolts, Nuts and Washers: ASTM A325 and A490
 - n. Laminated / Safety Tempered Glass: ANSI Z97.1
2. Finishes

- a. Stainless Steel
 - 1) Satin Finish: No. 4 satin, long grain.
 - 2) Mirror Finish: No. 8 non-directional mirror polished.
- b. Sheet Steel:
 - 1) Shop Prime: Factory-applied baked on coat of mineral filler and primer.
 - 2) Finish Paint: Two (2) coats of low sheen baked enamel, color as selected by the Architect.
 - 3) Steel Equipment: Two (2) coats of manufacturer's standard rust-inhibiting paint to exposed ferrous metal surfaces in both the hoistway and pit that do not have galvanized, anodized, baked enamel, or special architectural finishes.
- 3. Painting
 - a. All painting is as per Division 09 requirements.
- B. Hoistway Entrances Finish and Design
 - 1. Entrance Frames:
 - a. Passenger Elevators - New entrances to be welded and mitered steel with baked enamel finish.
 - 2. Door Panels:
 - a. Passenger Elevators – New door panels to be steel with baked enamel finish.
 - 3. Entrance Sills:
 - a. Passenger Elevators - Narrow Type Stainless Steel
- C. Designation and Data Plates, Labeling and Signage. - All Elevators
 - 1. Provide an elevator identification plate on or adjacent to each entrance.
 - 2. Provide floor designation cast plates at each elevator entrance, on both sides of the jamb at a height of sixty (60) inches to the baseline of floor indication.
 - a. Floor number designations and Braille shall be 2" high, 0.03" raised and stud mounted.
 - 3. Identify the designated medical emergency services elevator with 3" high international symbol at each elevator entrance on both sides of the jamb.
 - 4. Provide raised designations and Braille markings to the left of the car call and control buttons of the car operating panel(s).
 - a. Designations shall be a minimum of 5/8" high, 0.03" raised and stud mounted.

5. Provide elevators with data and marking plates, labels, signages and refuge space markings complying with A17.1 Elevator Safety Code as may be adopted and/or otherwise modified by the AHJ.
6. Architect shall select the designation and data plates from manufacturer's premium line of plates.

2.11 FIXTURES / SIGNAL EQUIPMENT

A. General - Design and Finish

1. The design and location of the hall and car operating and signaling fixtures shall comply with the ADAAG.
2. The operating fixtures shall be selected from the manufacturer's premium line of fixtures.
3. Custom designed operating and signaling fixtures shall be as shown on the drawings or as approved by the Owner / Architect.
4. The layout of the fixtures including all associated signage and engraving shall be as approved by the Owner / Architect.
5. Where no special design is shown on the drawings, the buttons shall be as follows:
 - a. Stainless steel convex type as selected by the architect from the manufacturer's premium line of push buttons.
 - b. The button shall have a small round indicator on the button with LED call registered light.
6. Where no special design is shown on the drawings, the faceplates shall be as follows:
 - a. Passenger Elevators
 - 1) Stainless Steel finish as selected by the architect.
7. Mount passenger elevator fixtures with tamperproof. The screw/fastener and key switch cylinder finishes shall match faceplate finish.
8. Where key-operated switch and or key operated cylinder locks are furnished in conjunction with any component of the installation, four (4) keys for each individual switch or lock shall be furnished, stamped or permanently tagged to indicate function.
9. All caution signs, pictographs, code mandated instructions and directives shall be engraved and filled with epoxy in code required colors.

B. Main Car Operating Panel

1. Car operating panel shall be incorporated in the swing-front return of the elevator cab.
2. Coordination with car front manufacturer shall be the responsibility of the Elevator Trade.
3. Provide a main car operating push button panel in the side wall where front returns are narrow.
4. Car operating panel shall be flush mounted with swing type, one-piece faceplate with heavy-duty concealed hinges.
 - a. Mount all key switches that are required to operate and maintain the elevators exposed on the car station except those specified within a locked service cabinet.

5. The push buttons shall become individually illuminated as they are pressed and shall extinguish as the calls are answered.
6. The operating panel shall include:
 - a. A call button for each floor served, located not more than 48" above the cab floor.
 - b. "Door open" / "Door close" / "Door Hold" buttons.
 - c. "Alarm" button, interfaced with emergency alarm. The alarm button shall illuminate when pressed.
 - d. "Emergency Stop" switch per local law located at 35" above the cab floor.
 - e. Self-dialing, hands-free, audio and visual emergency communication system actuation button with call acknowledging feature and ASME A17.1. design provisions.
 - f. Three (3) position firefighter key operated switch, call cancel button and illuminated visual/audible signal system with mandated signage engraved per ASME A 17.1 Standards.
7. Locked Firemen's' Service cabinet, keyed in accordance with local Code, containing required devices and signals in accordance with ASME A17.1 Standards.
 - a. Automatic opening of the locked cabinet door may be provided with signals initiated by the fire detection and alarm systems.
8. Provide a locked service cabinet flush mounted and containing the key switches required to operate and maintain the elevator, including, but not limited to:
 - a. Independent service switch.
 - b. Attendant service switch with associated operating buttons and signal indicators.
 - c. Light switch.
 - d. Fan switch.
 - e. G. F. I. duplex receptacle.
 - f. Emergency light test button and indicator.
 - g. Inspection Service Operation key switch.
 - h. Port for hand-held service tool where applicable.
 - i. Dimmer for cab interior lighting.
9. Car operating panel shall incorporate:
 - a. An integral (no separate faceplate) digital L.E.D. floor position indicator.
 - b. Emergency light fixture (without a separate faceplate) and black-filled engraved unit I.D. number or other nomenclature, as approved by Owner.
 - c. A "No Smoking" advisory.
10. Equip the main car operating panel with security car call keyed switches OR proximity card reader to disconnect the corresponding floor push button.
 - a. Security system shall be overridden by Phase II Firefighter's Emergency Operations in accordance with code.
11. Where posting of an advisory is permitted by the Governing Authority in lieu of the inspection certificate, engrave the following advisory on the hinged cover of the service cabinet, or where otherwise directed by the architect.

- a. Elevator Certificate is On File in Building Management Office.

C. Car Position Indicator

1. The position of the car in the hoistway shall be indicated by the illumination of the position indicator numeral corresponding to the floor at which the car has stopped or is passing.
 - a. Provide 2” high, 10-segment LED type position indicator with direction arrows, integral with the car operating panel.
 - b. Provide Lexan cover lens with hidden support frame behind fixture plate to protect the indicator readout.
 - c. Provide audible floor passing signal per ADA standards where not provided by the elevator signal control.
 - d. Flush mount fixture with cover to match selected car front or car operating panel finish.

D. Car Direction Lantern

1. Provide a car riding lantern with visual and audible signal in the edge of the strike and/or return post.
2. The lens shall project a minimum of 1/4” and shall be of solid Plexiglas.
3. Use concealed fasteners for flush mounting without hairline joint.
4. Car lantern shall indicate the direction of travel when doors are 3/4 open.
5. The unit shall sound once for the “up” direction and twice for the “down” direction.
 - a. Provide an electronic chime with adjustable sound volume.

E. Voice Annunciator – HAB1 & HAB2

1. Provide a voice annunciator in each elevator.
2. The device features shall comply with the requirements of ADAAG.
3. Coordinate size, shape and design with architect and other trades.
4. The system shall include, but not limited to:
 - a. Solid state digital speech annunciator.
 - b. A recording feature for customized messages.
 - c. Playback option.
 - d. Built-in voice amplifier.
 - e. Master volume control.
 - f. Audible indication for selected floor, floor status or position, direction of travel, floor stop, seismic operation, firefighter service and nudging.
5. Locate all associated equipment in a single, clearly labeled enclosure located either in the machine room and/or on car top.

F. Corridor Push Button Stations / Reuse Back Boxes

1. Push button signal fixtures shall be provided on each landing.
2. Each signal fixture shall consist of:
 - a. Up and down illuminating push buttons measuring 3/4” at their smallest dimension.

- b. A recessed mounting box, electrical conduit and wiring.
- 3. Intermediate landings shall be provided with fixtures containing two (2) push buttons while terminal landings shall be provided with fixtures containing a single push button.
- 4. Include firefighter key switch in the main lobby level station or other designated recall landing.
- 5. Where existing fixtures are located greater than 48" above the floor:
 - a. The existing back boxes shall be retained and used to attach the oversized fixture faceplate to locate the new buttons with a centerline of 42" above the finished floor.
 - 1) The Contractor has the option of providing a single oversized back box in lieu of retaining existing for faceplate attachment.
 - b. Standardize the new centerline distance on all floors.
- 6. All cutting, patching, grouting and/or plastering of masonry walls resulting from the removal or installation of corridor fixtures shall be performed by the Contractor so as to maintain the fire rating of the hoistway.
 - a. Finished painting or decorating of wall surfaces shall be by Division 09.

G. Hall Direction Lanterns (New)

- 1. Provide a visual and audible signal at each entrance to indicate the direction of travel and, where applicable, which car shall stop in response to the hall call.
 - a. Design the lantern with up and down indication at intermediate landings and a single indication at terminal landings.
 - b. Lanterns shall sound once for the up direction and twice for the down direction.
 - 1) Provide an electronic chime with adjustable sound volume.
 - c. Provide adjustable signal time (three [3] to ten [10] seconds, with one [1] second increments) to notify passengers which car shall answer the hall call and preset per ADAAG notification standards.
- 2. All fixtures shall incorporate a 2" high LED floor position indicator in the hall lantern fixture with direction arrows located on both sides of the indicator.
- 3. Locate the lantern above the corridor entrance.

H. Hoistway Access Switch

- 1. Install a cylindrical type keyed switch at top terminal in order to permit the car to be moved at slow speed with the doors open to allow authorized persons to obtain access to the top of the car.
- 2. Where there is no separate pit access door, a similar switch shall be installed at the lowest landing in order to permit the car to be moved away from the landing with the doors open in order to gain access to the pit.
- 3. Locate the switch in the terminal floor entrance jambs without faceplate at a height of 78" above the finished floor.

4. This switch is to be of the continuous pressure spring-return type and shall be operated by a cylinder type lock having not less than a five (5) pin or five (5) disc combination with the key removable only in the "OFF" position.
 - a. The lock shall not be operable by any key which operates locks or devices used for other purposes in the building and shall be available to and used only by inspectors, maintenance men and repairmen in accordance with A17.1 applicable Security Group.
5. Existing provisions that meet the aforementioned criteria may be updated with keyed switches to match new apparatus provided for uniformity of systems within the building.

I. Lobby Control Panel

1. Provide a Lobby Control Panel for elevators adjacent to the Fire Command Center as directed by the Architect.
2. Provide stainless steel faceplate with tamperproof screws.
3. The panel shall include:
 - a. 2" high LCD car position and travel direction indicators.
 - b. Master intercom station.
 - c. Three (3) position (on/car to lobby/off) switches.
 - d. Emergency power controls and indicators as per code requirements.
 - e. "Car at the designated floor with its doors open" indicator.
 - f. System trouble indications.
 - g. Car call floor lockout switches.
 - h. Floor lockout switches as herein further specified.

J. Emergency Power Control Panel

1. Provide the lobby console or other designated location with a control panel for emergency power operation as further specified.
 - a. An emergency power control panel provided at the designated location.
 - b. The panel shall contain:
 - 1) An indicator light that illuminates when a transfer to emergency power takes place.
 - 2) Indication that the elevators have arrived at the designated landing and have parked with the doors maintained in the open position.
 - 3) Key-operated override switch(es) and a manual selector switch(es) identified with positions for each elevator.
2. The control panel shall be engraved so as to identify the function of each control feature and device provided.
3. The Contractor shall provide all necessary electrical conduit and wiring between the elevator machine room(s), and the Emergency Power Control Panel.

2.12 CAR ENCLOSURES

A. Elevator Car Enclosure(s) and the Five Percent (5%) Rule:

1. In accordance with A17.1, Section 8.7, entitled "Alterations", where a new or remodeled elevator car enclosure is included in the base scope of work, the Contractor shall, within thirty (30) days after execution of the contract, weigh the elevator, or one (1) elevator of each group of elevators included in the base scope of work, to determine the present deadweight of the platform/sling/cab assembly.
2. The Contractor shall, when necessary, weigh the interior materials of a single cab to better estimate the total existing weight of existing materials being removed as part of the alteration.
3. The Contractor shall make every effort to provide accurate weight measurements while taking into consideration all weights that may present themselves at the time the measurement is taken such as compensation, compensating sheave, hoist ropes and traveling cables that may affect the measurement of the assembly itself.
4. The Contractor shall evaluate the actual counterbalance percentage for each sample elevator to identify prevailing conditions.
5. Measurements of actual cab weight shall be compared to the original deadweight of the car as stamped on the crosshead data tag.
6. Where no data tag exists, the Contractor shall make every effort to determine the original weight of the platform/sling/cab through calculations based on the current weight of the counterweight assembly and the verified percent of full load counterbalance.
7. The amount of weight that may be added to the car, so as to remain within the limits of the "5% Rule", shall be calculated based on the following:
 - a. $(\text{Original Deadweight} + \text{Capacity}) \times (0.05) = \text{Maximum Additional Weight Allowed}$
8. The Contractor shall document and notify the Owner and Consultant of the results of the measurements taken and what weight, if any, can be added or needs to be removed from the cab in order to maintain compliance with the 5% Rule.
9. The Contractor shall work diligently with the Owner and/or Owner's Representative and/or Architect as well as the manufacturer of the car enclosure to minimize additional weights of the new or remodeled car enclosure so as to maintain compliance with the 5% Rule.
10. Contractor shall be responsible for proper adjustment of the counterbalance of the system, including the static balance of the platform/sling/car enclosure, upon completion of the car interior work.
11. Costs associated with this work shall be included in the base modernization price.
12. Provide a new data tag on the crosshead of the elevator indicating the new deadweight, the current percent counterbalance and the date of the alteration.

B. Elevator Cab / General Design Requirements

1. The design, materials and finishes of the cab enclosures shall be as shown on the Architectural Drawings.
2. Materials:
 - a. Particleboard: Premium grade, AWI, Section 200, fire retardant treated, equal to Duraflake FR
 - b. Plastic Laminate: Comply with NEMA LD3, 0.05" thick, color, texture and finish as selected by the architect

3. Steel Shell: 14-gauge furniture steel reinforced and designed to accept finished wall panels. Finish shell panels with one coat of rust inhibitive primer and two (2) coats of enamel paint in accordance with Section 09900. Apply 1/8" thick, rubberized sound deadening material to the hoistway side of the shell.
 - a. All panels shall have minimum radii. Apply sealant beads to panel joints before bolting together with lock washers.
4. Aluminum Shell: Minimum .090" walls and .125" canopy. Reinforce wall panels and ceiling as may be necessary.
 - a. Apply sealant beads to panel joints before bolting together with lock washers.
5. Wood Shell: 3/4" thick particleboard with backing laminate at both sides designed to accept finished wall panels. Apply 26-gauge sheet steel or fire proofing compound to the hoistway side of the shell.
6. Canopy: Canopy construction methods shall match the shell walls. Use 12-gauge furniture sheet steel and adequately support canopy to comply with the loading requirements of the Code.
 - a. Provide necessary cutouts for the installation of fan and top emergency exit. Arrange exit panel to swing up using a heavy duty piano hinge.
 - b. The exit panel shall have dual locks, necessary stops and a handle.
 - c. When in the locked position, the panel shall be flush with the interior face of the canopy with hairline joints.
7. Base: Where finished base provided under another section of these specifications, recess and prepare the shell to accept the base.
 - a. Provide concealed vent slots above side and rear wall base for proper ventilation. Arrange and size vent slots for quiet operation without any whistling. Use 16 gauge baffles to protect the hoistway side of the vent slots.
 - b. The elevator cab shop drawings shall include elevator vent calculations and number, location and size of top and bottom vent holes.
8. Flooring: Where finished flooring is provided under another section of these specifications, recess and prepare sub-flooring to accept the finished flooring.
9. Front Return Panels, Entrance Posts and Transom: Use 14-gauge furniture sheet steel with proper reinforcing to prevent oil canning.
 - a. Fixed type return panel shall have required cutouts for car operating and signaling fixtures.
 - b. Swing front return panels shall have required cutouts for the car call buttons, keyed switches, indicators, emergency light fixture, cabinets and the specified special control and signaling devices.
 - 1) Provide concealed full height stainless steel piano hinges of sufficient strength to support the panel, without sagging, in the open position.
 - 2) The concealed locks shall secure the panel at two (2) points with linkage that shall be free of vibration and noise when in the locked position.

- 3) When locked in the closed position, the front return panel shall be in true alignment with the transom and base.
 - 4) Lock release holes shall be not more than 1/4" diameter and be located at the return side jamb of the panel.
 - 5) Engrave the elevator identification number and capacity, no smoking sign, firefighter instructions, and other code mandated instructions and caution signs directly in the front return panel. Applied panels are unacceptable.
- c. Transom shall be 14 gauge, and be reinforced and constructed the same as the front return panels.
 - d. Construct entrance posts for the passenger elevators from 12-gauge sheet steel and reinforce to maintain vertical alignment with the adjacent panels.
 - e. Provide channel post entrance jambs for the service elevators. Clad channels with 14-gauge sheet steel and through bolt channels to the floor and to the reinforced header section.
10. Cab Doors: Standard 1" thick, 14-gauge hollow metal flush construction, reinforced for power operation and insulated for sound deadening. Paint hatch side of doors black and face cab side with 16-gauge sheet steel in selected material and finish.
 - a. The door panels shall have no binder angles. All welds shall be continuous, ground smooth and invisible.
 - b. Drill and reinforce doors for installation of door operator hardware, door protective device, door gibs, etc.
11. Ceiling: Construction techniques for wall panels shall apply to ceiling panel construction. Locate top emergency exit inconspicuously. Construct and mount the exit panel to prevent light leakage around the perimeter of panel.
12. Ventilation: The ventilation system of the exhaust type shall be provided in each elevator.
 - a. The system shall include a blower driven by a direct connected motor and mounted on top of car with isolation to effectively prevent transmission of vibration to the car structure. The blower shall have not less than two (2) operating speeds. The ventilation system shall be sized to provide one (1) air change per minute at low speed and one and one-half (1.5) air changes per minute at high speed. The unit design and installation shall be such that the maximum noise level, when operating at high speed, shall not exceed 55 dBA approximately three (3) feet above the car floor. A three (3)-position switch to control the blower shall be provided in the service panel.
13. Lighting: Arrange lighting fixtures and ceiling assembly to provide even illumination without hot spots and shadows. Overlap LED lamps where cove lighting is specified.
 - a. Design and configure lighting system to facilitate maintenance of the fixtures.
14. Handrails: All attachment hardware shall match the selected handrail and shall permit handrail removal from within the cab.
 - a. Provide a minimum of 10-gauge plate at the hatch side of the shell, aligned with the handrail attachment points, to assure secure handrail mounting.

- b. Design handrail attachment system to support the weight of a person (two hundred fifty [250] pounds) sitting on it without any deflection and damage to the handrail, cab panel and the shell.
- 15. Protective Pads and Pad Hooks: Provide pad hooks at locations as directed by the Architect. Protective pads shall cover the front return panels, and the side and rear walls. Provide cutouts in pads for access to the cab operating and signaling devices. Pads shall be fire-resistant canvas with two (2) layers of cotton batting padding.
 - a. Identify each pad by elevator number and wall location.
- 16. Accessories: Construct elevator cab to accommodate the door operator, hangers, interlocks and all accessory equipment provided under other sections of these specifications, including firefighter phones, card readers and CCTV.
- 17. All cab materials shall conform to the code prescribed flame spread rating and smoke development requirements.

C. Cab Fabrication and Installation

- 1. Maintain accurate relation of planes and angles with hairline fit of contacting panels and/or surfaces.
- 2. Any shadow gaps (reveals) between panels shall be consistent and uniform.
- 3. Unless otherwise specified or shown on the drawings, for work exposed to view use concealed fasteners.
- 4. Maximum exposed edge radius at corner bends shall be 1/16". There shall be no visible grain difference at the bends.
- 5. Form the work to the required shapes and sizes with smooth and even curves, lines and angles. Provide necessary brackets, spacers and blocking material for assembly of the cab.
- 6. Interior cab surfaces shall be flat and free of bow or oil canning. The maximum overall deviation between the low and high points of 24" x 24" panel section shall not exceed 1/32".
- 7. Make weights of connections and accessories adequate to safely sustain and withstand stresses to which they will be subjected.
- 8. All steel work except stainless steel and bronze materials shall be painted with an approved coat of primer and one (1) coat of baked enamel paint.
- 9. Cab Finish Warranty Enhancement
 - a. Contractor shall be responsible for engineering and installing interior cab finishes in a manner that will withstand all code mandated inspections and test procedures. Failure of finishes during testing shall be repaired by the contractor without expense to the owner. Any objections or qualifications to material selection or design shall be identified during the engineering of the cab interior drawings for review by the owner.

D. Passenger Elevators

- 1. Wall Panels:
 - a. 3/4" thick fire retardant plywood or particleboard with all surfaces faced with stainless steel as directed by the Architect. The panels shall be constructed as the removable type.

2. Canopy: Paint canopy with a coat of primer and one coat of low sheen enamel paint.
3. Front Return Panels and Transom: Stainless steel swing OR fixed type front return panel.
 - a. Provide stainless steel entrance posts having mitered, welded and ground smooth corners.
4. Cab Doors: Stainless steel with No. 4 finish.
5. Ceiling:
 - a. Suspended 3/4" thick fire retardant plywood or particleboard with all surfaces finished in the selected stainless steel.
6. Handrails:
 - a. 2" inch diameter stainless steel handrail at the sides/rear wall(s).
7. Lighting:
 - a. The cab lighting system shall be as shown on the drawings.
 - b. Fully recessed LED down light fixtures with aluminum alzak reflector. Unless otherwise shown on the drawings, provide a light fixture in each ceiling panel.
8. Base: Provide a 4" high base in the material and finish selected by the architect at the sides and rear of the cab enclosure.

E. Elevator Cab Enclosure Fan

1. Provide an exhaust type two (2)-speed fan unit with cover grill, mounting accessories and necessary cab enclosure modifications.
 - a. Fan unit shall include self-lubricating motor with housing rubber mounted for sound vibration isolation.
2. Provide a key switch in the elevator cab enclosure for control of fan unit.
3. Provide necessary wiring and approved conduit to properly connect fan unit with power source and control key switch.

2.13 EMERGENCY LIGHTING / COMMUNICATIONS / SIGNALING

A. Battery Back Up Emergency Lighting Fixture and Alarm

1. Provide a self-powered emergency light unit.
 - a. The light fixture shall contain a minimum of two (2) LED lamps. Flush mount the light fixture in the main car station. The fixture shall have a milk white lens.
2. Provide a car-mounted battery unit including solid-state charger and testing means enclosed in common metal container.
 - a. The battery shall be rechargeable nickel cadmium with a ten (10)-year minimum life expectancy. Mount the power pack on the top of the car.

- b. Provide a 6" diameter alarm bell mounted directly to the battery/charger unit and connected to sound when any alarm push button or stop switch in the car enclosure is operated.
- c. The bell shall be configured to operate from power supplied by the building emergency power generator. The bell shall produce a sound output of between 80-90 dBa (measured from a distance of 10') mounted on top of the elevator car.
 - 1) Activation of this bell shall be controlled by the stop switch and alarm button in the car operating station.
 - 2) The alarm button shall illuminate when pressed.
- 3. The operation shall be completely automatic upon failure of normal power supply.
- 4. Unit shall be connected to normal power supply for car lights and arranged to be energized at all times so it automatically recharges battery after use.

B. Common Alarm Bell

- 1. Provide a common alarm bell located in the elevator pit.
 - a. The bell shall be configured to operate when the alarm or stop switch of any elevator is activated, during both normal and battery back-up power conditions.

C. Emergency Communication System

- 1. Provide a two-way communication system consisting of the following components:
 - a. Two-way Verbal Communication
 - 1) Provide an ICC/ANSI A117.1 compatible, hands-free intercommunication system for all elevators for two-way, multi-path communication between the elevator car stations and master stations using a central exchange design system.
 - 2) The communication system shall include:
 - a) A car station in each elevator.
 - 3) The car station shall have a loudspeaker and a microphone to provide hands-free communication. The station shall be installed behind the car operating panel.
 - 4) The car station shall include:
 - a) A push button to actuate the two-way communication means shall be provided in or adjacent to a car operating panel.
 - b) Operating instructions shall be incorporated with or adjacent to the push button.
 - 5) Provide all power supplies, wire, conduit, fittings, etc.
 - 6) The intercom system shall include the following features:
 - a) Test button and monitoring features to verify audio circuit path.

- b) All call buttons to initiate a call to all cars in the systems.
 - c) Priority button in the remote monitoring panel stations.
 - d) Visual acknowledgment and engraving for the hearing impaired.
- 7) Provide a battery backup power supply for the intercom capable of providing sufficient power to operate the complete system for a minimum of four (4) hours.

b. Message Display

- 1) Located in the car operating panel.
- 2) Visual display, for text based messages, that is activated by authorized personnel to acknowledge that communication is established and display responses from a trapped passenger(s) including a passenger(s) who cannot verbally communicate or cannot hear.

c. Message Response

- 1) Located in the car operating panel.
- 2) Individual pushbuttons labeled “Yes” and “No” for text based communication.

d. One-way Video Camera

- 1) Provide in car camera capable of observing passengers in any location in the elevator car.

e. Master Stations

- 1) Shall be located as follows:
 - a) A master station in each machine room to communicate with the central and satellite monitor panels, and with each car within its group.
 - b) A master station in the Engineers Room to communicate with all stations in the system.
 - c) A master station where selected by the campus.
- 2) Master stations shall include:
 - a) Selector push buttons.
 - b) Annunciator lights for each connected station.
 - c) Speaker/microphone.
 - d) Volume control and function buttons.
 - e) Text based communication interface.
 - f) Visual display for elevator video.
 - g) Associated software for all of the above.
- 3) Provide all power supplies, wire, conduit, fittings, etc.

2. Two Way Communication System Operation

- a. The master stations shall communicate with other master stations and any elevator in that group.
- b. A call shall be placed from the elevator car station by pressing the emergency call or alarm button.
 - 1) This action shall cause the lamp in the corresponding button of all the designated master stations to flash and an intermittent tone to be heard.
 - 2) When the incoming call is answered, the flashing light shall go to a steady condition.
 - 3) Disconnection of a call is simply done by depressing the designated car button once.
 - 4) If a call request is placed during a conversation, it shall be indicated by a flashing light and short tone of every designated master station.
 - 5) When the original conversation is completed, the normal intermittent tone shall resume.
- c. A master station shall be connected to any of its designated car stations by depressing the corresponding call button.
 - 1) The lamp in the button shall be illuminated while the button is depressed.
 - 2) In the car station an audible tone shall be emitted and immediate communication is established.
 - 3) The call shall be ended by depressing the button a second time, disconnecting the circuit.
 - 4) The master stations shall call any other master station by depressing the corresponding call button.
 - 5) The button shall lock in its down position and the lamp shall be lit with a steady light.
 - 6) At the called master station, a short tone shall be sent out and the lamp in the button corresponding to the "calling" party shall be lit.
 - 7) After the tone, immediate communication is established.
- d. On all non-called master stations, the lamps corresponding to the calling and called stations shall be illuminated as an indication that those stations are busy.

D. Firefighters' Two-Way Telephone Communications System

- 1. Provide a complete two-way telephone communications system for point-to-point communications between authorized personnel.
- 2. Provide firefighter telephone box or telephone jack in the car operating panel in accordance with the requirements of the local authorities. The box shall be fitted with a flush mounted door having hairline joints.
- 3. Connection devices (jacks) and all associated wiring shall be provided by the elevator Contractor as part of the base bid.
- 4. The handsets shall be self-powered and not require an external power source for operation.
 - a. The firefighter phone shall be furnished under Division 16.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspection

1. Study the Contract Documents with regard to the work as specified and required so as to ensure its completeness.
2. Examine surface and conditions to which this work is to be attached or applied and notify the consultant in writing if conditions or surfaces are detrimental to the proper and expeditious installation of the work. Starting the work shall imply acceptance of the surfaces and conditions to perform the work as specified.
3. Verify, by measurements at the job site, dimensions affecting the work. Bring field dimensions which are at variance with those on the accepted shop drawings to the attention of the consultant. Obtain the decision regarding corrective measures before the start of fabrication of items affected.
4. Cooperate in the coordination and scheduling of the work of this section with the work of other sections so as not to delay job progress.

3.2 INSTALLATION / PROJECT PHASING

A. Installation

1. Modernize the elevators, using skilled personnel in strict accordance with the final accepted shop drawings and other submittals.
2. Comply with the code, manufacturer's instructions and recommendations.
3. Coordinate work with the work of other building functions for proper time and sequence to avoid delays and to ensure right-of-way of system. Use lines and levels to ensure dimensional coordination of the work.
4. Accurately and rigidly secure supporting elements within the shaftways to the encountered construction within the tolerance established.
5. Provide and install motor, switch, control, safety and maintenance and operating devices in strict accordance with the submitted wiring diagrams and applicable codes and regulations having jurisdiction.
6. Ensure sill-to-sill running clearances do not exceed 1 ¼" at all landings served.
7. Arrange door tracks and sheaves so that no metal-to-metal contact exists.
8. Reinforce hoistway fascias to allow not more than 1/2" of deflection.
9. Install elevator cab enclosure on platform plumb and align cab entrance with hoistway entrances.
10. Sound isolate cab enclosure from car structure. Allow no direct rigid connections between enclosure and car structure and between platform and car structure.
11. Isolate cab fan from canopy to minimize vibration and noise.
12. Refer to Division 09 for surface preparation and paint application requirements.
13. Prehang traveling cables for at least twenty-four (24) hours with ends suitably weighted to eliminate twisting after installation.
14. Pack openings around oil line with fire resistant, sound isolating glass or mineral wool. – STL2 & STL3
15. Provide isolation pad between platen head and car structure. – STL2 & STL3
16. Sound isolate pump units and controllers from building structure. – STL2 & STL3
17. After installation, touch up in the field, surfaces of shop primed elements which have become scratched or damaged.
18. Lubricate operating parts of system as recommended by the manufacturer.

B. Removal of Elevators

1. If extenuating circumstances (i.e. separating controller interconnections, inspection, testing, etc.), require that multiple cars of a single elevator group be removed from service simultaneously, the work shall be performed outside of the normal business hours at a time mutually agreed to by the architect and Contractor.
2. A minimum of five (5) days advance written notice shall be given to the Elevator Consultant by the Contractor detailing the reasons for the simultaneous removal of the elevators from service along with the estimated out-of-service time.
3. The request shall be subject to review by the Elevator Consultant and approved by the Owner prior to the commencement of the work.
4. Costs for this work in addition to associated expenses shall be included as part of the base bid pricing.

C. Transfer of Hall Button Risers

1. Transfer of the hall button riser(s) to the new signal control systems shall be performed on a not-to-interfere basis and shall not interrupt building operations or inconvenience building occupants.
2. Costs for this work in addition to associated expenses shall be included as part of the base bid pricing.

3.3 FIELD QUALITY CONTROL**A. Inspection and Testing**

1. Upon completion of each work phase or individual elevator specified herein, the Contractor shall, at its own expense, arrange and assist with inspection and testing as may be required by code in order to secure a permit to operate.

B. Substantial Completion

1. The work shall be deemed "Substantially Complete" for an individual unit or group of units when, in the opinion of the Consultant, the unit is complete, such that there are no material and substantial variations from the Contract Documents, and the unit is fit for its intended purpose.
2. Governing authority testing shall be completed and approved in conjunction with inspection for operation of the unit; a certificate of operation or other required documentation issued; and remaining items mandated for final acceptance completion are limited to minor punch list work not incorporating any life safety deficiencies.
3. The issuance of a substantial completion notification shall not relieve the Contractor from its obligations hereunder to complete the work.
4. Final completion cannot be achieved until all deliverables, including but not limited to training, spare parts, manuals, and other documentation requirements, have been completed.

C. Contractor's Superintendent

1. The Contractor shall assign a competent project superintendent during the work progress and any necessary assistant, all satisfactory to the Owner. The superintendent shall

represent the Contractor and all instructions given to him shall be as binding as if given to the Contractor.

3.4 PROTECTION / CLEANING

A. Protection and Cleaning

1. Adequately protect surfaces against accumulation of paint, mortar, mastic and disfiguration or discoloration and damage during shipment and installation.
2. Upon completion, remove protection from finished surfaces and thoroughly clean and polish surfaces with due regard to the type of material. Work shall be free from discoloration, scratches, dents and other surface defects.
3. The finished installation shall be free of defects.
4. Before final completion and acceptance, repair and/or replace defective work, to the satisfaction of the Owner, at no additional cost.
5. Remove tools, equipment and surplus materials from the site.

B. Barricades and Hoistway Screening

1. The Contractor shall provide barricades where necessary in order to maintain adequate protection of areas in which work specified by the Contract Documents is being performed, including open hoistway entrances. Fabrication and erection as all barricades shall be in compliance with applicable OSHA regulations.
2. As required, the Contractor shall provide temporary wire mesh screening in the hoistway and of any elevator undergoing work specified in the Contract Documents. This screening shall be installed in such a manner as to completely segregate the hoistway from that of adjacent elevators. Screening shall be constructed from .041" diameter wire in a pattern that rejects passage of a 1" diameter ball.

3.5 DEMONSTRATION

A. Performance and Operating Requirements

1. Passenger elevators shall be adjusted to meet the following performance requirements:
 - a. Speed: within $\pm 3\%$ in both directions of travel under any loading condition.
 - b. Leveling: within $\pm 1/4"$ as measured between the car entrance threshold and the landing sill on any given floor under any loading condition.
 - c. Typical Floor-to-Floor Time: (Recorded from the doors start to close on one floor until they are 3/4 open at the next floor) under various loading conditions.
 - d. Door Operating Times

Door Type	Opening	Closing
36" Single Speed Center Opening	1.5 sec.	2.1 sec.
36" Single Speed Side Opening	2.5 sec.	3.6 sec.
48" Two Speed Side Opening	2.7 sec.	4.5 sec.
54" Two Speed Side Opening	3.3 sec.	5 sec.

- e. Door dwell time for hall calls: 4.0 sec with Advance lantern signals.
- f. Door dwell time for hall calls: 5.0 sec without Advance lantern signals.
- g. Door dwell time for car calls: 3.0 seconds.
- h. Reduced non-interference dwell time: 1.0 seconds.

2. Maintain the following ride quality requirements for the passenger elevators:

- a. Where pit permits, extend bottom roller guides by not less than one half the distance from the centerline of the upper roller guides to the platform.
- b. Noise levels inside the car shall not exceed the following:
 - 1) Car at rest with doors closed and fan off - 40 dba.
 - 2) Car at rest with doors closed, fan running - 55 dba.
 - 3) Car running at high speed, fan off - 50 dba.
 - 4) Door in operation - 60 dba.
- c. Vertical accelerations shall not exceed 14 milli-g and horizontal accelerations shall not exceed 20 milli-g.
 - 1) The accelerometer used for this testing shall be capable of measuring and recording acceleration to nearest 0.01 m/s² (1 milli-g) in the range of 0-2 m/s² over a frequency range from 0-80 Hz with ISO 8041 filter weights applied. Accelerometer should provide contact with the floor similar to foot pressure, 60 kPa (8.7psi).
- d. The amplitude of acceleration and deceleration shall not exceed 2.6 - 2.8 ft./sec² for geared and MRL traction, and 3.5 - 4 ft./sec² for gearless traction elevators.
- e. The maximum jerk rate shall be 1.5 to 2.0 times the acceleration and deceleration.
- f. The maximum velocity which the elevator achieves in either direction of travel while operating under load conditions that vary between empty car and full rated load shall be within $\pm 3\%$ of the rated speed.

B. Acceptance Testing

- 1. Comply with the requirements of Division 01.
- 2. The Contractor shall provide at least five (5) days prior written notice to the Owner and Consultant regarding the exact date on which work specified in the Contract Documents will reach completion on any single unit of vertical transportation equipment.
- 3. In addition to conducting whatever testing procedures may be required by code in order to gain approval of the completed work, and before seeking approval of said work by the Owner, the Contractor shall perform certain other tests in the presence of the Consultant.
- 4. The Contractor shall provide test instruments, test weights, and qualified field labor as required to safely operate the unit under load conditions that vary from empty to full rated load and, in so doing, to successfully demonstrate compliance with applicable performance standards set forth in the project specifications with regard to:
 - a. Operation of safety devices.
 - b. Sustained high-speed velocity of the elevator in either direction of travel.
 - c. Brake-to-brake running time and floor-to-floor time between adjacent floors.
 - d. Floor leveling accuracy.
 - e. Door opening/closing and dwell times.

- f. Ride quality inside the elevator car.
 - g. Communication system.
 - h. Load settings at which anti-nuisance, load dispatch, and load non-stop features are activated.
- 5. Upon completion of work specified in the Contract Documents on the last car in any group of elevators, and in conjunction with the aforementioned testing procedures, the Contractor shall carry out additional testing of group dispatch/supervisory control features in the presence of the Consultant.
- 6. The Contractor shall provide test instruments and qualified field labor as required to successfully demonstrate:
 - a. The back-up operating mode for group dispatch failure.
 - b. Simulated and actual emergency power operation.
 - c. Firefighter, attendant and independent service operations.
 - d. Restricted access security features and card reader controls.
 - e. Zoning operations and floor parking assignments.
 - f. Up/down peak operation.
- 7. Upon completion of the modernization of each individual elevator, emergency power testing shall be conducted by the Contractor after normal business hours and/or weekends.
- 8. After hour tests of systems such as emergency generators, fire service, and security systems shall be conducted at no extra cost to the Owner.

END OF SPECIFICATION

SECTION 21 05 00 GENERAL PROVISIONS FOR FIRE PROTECTION SYSTEMS

PART 1- GENERAL

1.1 SCOPE AND INTERPRETATION

- A. These Specifications and accompanying Drawings provide for the furnishing and the installation of the fire protection systems, including all accessories such as sprinkler heads, associated valves, and etc.
- B. The specifications and Drawings require the Master Fire Suppression Piping Contractor, to provide all labor, materials, equipment and appurtenances to perform of all Work pertaining or incidental thereto, which is needed to complete the Work shown on the Drawings and called for in the Specifications.
- C. The complete fire protection system and the Work shall be so installed as to give proper and continuous service under all conditions, and shall be in accordance with the requirements of all public authorities having jurisdiction and to the complete satisfaction of the Owner. Any Work shown on the Drawings and not particularly described in the specifications, or vice versa or any Work which may be deemed necessary to complete the Contract shall be provided by the Contractor as part of this Contract.
- D. For purposes of clearness and legibility, fire protection Drawings are essentially diagrammatic and size and location of equipment are drawn to scale wherever possible. The Drawings indicate size, connection points and routes of pipe. It is not intended, however, that all offsets, rises and drops are shown. Provide piping as required to fit structure, avoid obstruction, and retain clearances, headroom openings and passageways.
- E. Sprinklers shown and described on the Drawings shall be connected to water supply piping in accordance with the requirements of NFPA 13, Standard for the Installation of Sprinkler Systems, to conform to NFPA 13 Section 5 and New York State Building Code, despite any possible omission of indication of such piping on the plans. Any question involving the installation of such piping shall be referred to the Owner for resolution.
- F. Fire protection systems shall be tested in accordance with the New York State Uniform Fire Prevention and Building Code or the International Building Code and the International Fire Code with Supplement.
- H. Scope of Work: The fire protection work of this contract shall include but shall not be limited to the following systems, equipment and services:

1. Piping: Installation of complete sprinkler systems piping from the point of connection at a coupling of the existing floor control valve. Piping includes among other things: flow switch, drainage piping, sprinkler heads etc.
2. The testing of the sprinkler system shall be as per the provisions of Section 211313.
3. Painting requirements for dedicated piping of sprinkler system shall be as per Section 211313.
4. Piping: To comprise all hangers, pipe guides, rods, beam clamps, brackets, pipe anchors, other attachments, floor flanges, masonry anchors, bolts, nuts, washers, and other items as required to fully support all piping and equipments installed under this contract.
5. Miscellaneous Work: Included shall be all items of materials, piping, controls, wiring and other miscellaneous items not specifically shown on Contract Drawings or called for herein but which are normally furnished and required for a complete installation of this type.
6. Sealing of Openings/penetrations: Openings left in walls, floors, ceilings or partitions shall be sealed. Penetrations into shall be sealed to an airtight condition. Penetrations through insulated systems, such as refrigerated rooms/equipment, etc, shall be insulated and sealed on both sides of penetration. Sealant on interior side of such insulated spaces/equipment shall be silicone recommended by manufacturer. Finish shall match existing adjoining finish in all respects.
7. Coordination Drawings: The Fire Protection Systems drawing that includes sprinkler and standpipe piping shall be coordinated with HVAC, Electrical and Plumbing drawings to avoid conflicts and interference in installing the work with ductwork, steam and hydronic piping, diffusers, plumbing drainage, vent and water piping, electrical wiring, and electrical lighting fixtures, etc. including all other equipment at the ceiling in the allocation of space.

1.2 CODES AND STANDARDS

- A. It shall be unlawful for any person to perform the work referred to under this Fire Protection Specifications and/or shown on the Fire Protection Contract Drawings unless such person is a licensed master fire suppression piping contractor, as permitted by the New York State Building Code and unless such work is performed under the direct and continuing supervision of a licensed master fire suppression piping contractor.

- B. Where requirements for products, materials, systems, equipment, methods and other portion of the work specified herein exceed minimum requirements of regulatory agencies having jurisdiction over the construction work, contractor shall comply with such requirements specified herein, unless specifically approved otherwise by the Owner.

1.3 GUARANTEES AND WARRANTIES

- A. This Article shall apply to Guarantees and Warranties.
- B. Contractor's Guarantees: The Contractor guarantees that all Work of this Contract is free from all defects, and is as specified, and that should any defects, which cannot be proven to have been caused by improper use, develop within the space of one year from the date of substantial completion of the Work, such defects shall be made good by the Contractor, free of cost to the owner or the facility.

1.4 INSTRUCTION FOR CAMPUS

- A. After the fire protection system has been tested, and all other items adjusted and operating properly to the satisfaction of the Owner, Contractor shall furnish a competent person to instruct the campus staff in the operation and maintenance of the systems. Determination of the date and time of such instruction shall be under the direction of the Owner's Representative.

1.5 SUBMITTALS

- A. Formal submission for approval of manufacturer is not required if the Contractor provides equipment as per manufacturer/model number or series listed in the specification. Formal submissions are also not required for materials and appurtenances (ex. pipes, etc.) if the Contractor provides items as defined in the specification. In this case, Contractor must submit affidavit (for record purposes only) stating that listed equipment and/or items as defined in the specification will be provided. Submittals are mandatory for certain critical items and will be so noted in the respective specifications. Submittals are always required to verify capacity. Schedules, installation instructions, startup manuals, operation and maintenance manuals, and shop drawings are always required to be submitted.

1.6 CLEANING AND REPAIR

- A. At the completion of the Work and before the final inspection is made the Contractor shall thoroughly flush the system and leave it free from all marks, scratches, stains, and other damage. All pumps, filters, and other equipment shall be cleaned and left in condition to operate, and the work, as a whole, left in perfect working order. Remove all tools, debris and excess materials from the premises.

- B. Contractor shall not leave sharp exposed metal edges (bottom of threaded rods, equipment supports, etc.) that could otherwise present safety hazards to the building's occupants/work staff.

END OF SECTION

LIST OF SUBMITTALS

SUBMITTAL	DATE SUBMITTED	DATE APPROVED
Coordination		Drawings:
_____	_____	
Contractor's affidavits For submission of specified Materials/or appurtenances	_____	_____
Painting Schedule:	_____	

SECTION 210529 - FIRE PROTECTION HANGERS AND SUPPORTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes hangers and supports for mechanical system piping and equipment.

1.2 DEFINITIONS

- A. MSS: Manufacturers Standardization Society for the Valve and Fittings Industry.
- B. Terminology: As defined in MSS SP-90, "Guidelines on Terminology for Pipe Hangers and Supports."

1.3 SUBMITTALS

- A. Product Data: For each type of pipe hanger, channel support system component, and thermal-hanger shield insert indicated.
- B. Shop Drawings: Signed and sealed by a qualified professional engineer for multiple piping supports and trapeze hangers.
- C. Welding Certificates: Copies of certificates for welding procedures and operators.

1.4 QUALITY ASSURANCE

- A. Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
- B. Engineering Responsibility: Design and preparation of Shop Drawings and calculations for each multiple pipe support, trapeze, and seismic restraint by a qualified professional engineer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Pipe Hangers:

- a. AAA Technology and Specialties Co., Inc.
- b. B-Line Systems, Inc.
- c. Carpenter & Patterson, Inc.
- d. Empire Tool & Manufacturing Co., Inc.
- e. Globe Pipe Hanger Products, Inc.
- f. Grinnell Corp.
- g. GS Metals Corp.
- h. Michigan Hanger Co., Inc.
- i. National Pipe Hanger Corp.
- j. PHD Manufacturing, Inc.
- k. PHS Industries, Inc.
- l. Piping Technology & Products, Inc.
- m. OR Approved Equals

2. Powder-Actuated Fastener Systems:

- a. Gunnebo Fastening Corp.
- b. Hilti, Inc.
- c. ITW Ramset/Red Head.
- d. Masterset Fastening Systems, Inc.
- e. OR Approved Equals

2.2 MANUFACTURED UNITS

- A. Pipe Hangers, Supports, and Components: MSS SP-58, factory-fabricated components. Refer to "Hanger and Support Applications" Article in Part 3 for where to use specific hanger and support types.
- 1. Galvanized, Metallic Coatings: For piping and equipment that will not have field-applied finish.
 - 2. Nonmetallic Coatings: On attachments for electrolytic protection where attachments are in direct contact with copper tubing.

PART 4 - PART 3 - EXECUTION

4.13.1 HANGER AND SUPPORT APPLICATIONS

- A. Specific hanger requirements are specified in Sections specifying equipment and systems.

- B. Comply with MSS SP-69 for pipe hanger selections and applications that are not specified in piping system Specification Sections.
- C. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
 - 1. Adjustable Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated stationary pipes, NPS 1/2 to NPS 30.
 - 2. U-Bolts (MSS Type 24): For support of heavy pipe, NPS 1/2 to NPS 30.
- D. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
 - 1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
 - 2. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
- E. Building Attachments: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
 - 1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
 - 2. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
 - 3. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
 - 4. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
 - 5. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.

4.23.2 HANGER AND SUPPORT INSTALLATION

- A. Pipe Hanger and Support Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.
- B. Heavy-Duty Steel Trapeze Installation: Arrange for grouping of parallel runs of horizontal piping and support together on field-fabricated, heavy-duty trapezes.

1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified above for individual pipe hangers.
 2. Field fabricate from ASTM A 36/A 36M, steel shapes selected for loads being supported. Weld steel according to AWS D-1.1.
- C. Install building attachments within concrete slabs or attach to structural steel. Space attachments within maximum piping span length indicated in MSS SP-69. Install additional attachments at concentrated loads, including valves, flanges, guides, strainers, and expansion joints, and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.
- D. Install powder-actuated drive-pin fasteners in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
- E. Install mechanical-anchor fasteners in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.
- F. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.
- G. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- H. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

4.33.3 EQUIPMENT SUPPORTS

- A. Fabricate structural-steel stands to suspend equipment from structure above or to support equipment above floor.
- B. Grouting: Place grout under supports for equipment and make smooth bearing surface.

4.43.4 METAL FABRICATION

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

4.53.5 ADJUSTING

- A. Hanger Adjustment: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Hanger rods shall have double nut adjustment at pipe support.

4.63.6 PAINTING

- A. Touching Up: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 210529

SECTION 210553 - FIRE PROTECTION IDENTIFICATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following mechanical identification materials and their installation:
1. Pipe markers.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For color, letter style, and graphic representation required for each identification material and device.
- C. Valve numbering scheme.
- D. Valve Schedules: For each piping system. Furnish extra copies (in addition to mounted copies) to include in maintenance manuals.

1.3 QUALITY ASSURANCE

- A. ASME Compliance: Comply with ASME A13.1, "Scheme for the Identification of Piping Systems," for letter size, length of color field, colors, and viewing angles of identification devices for piping.

1.4 COORDINATION

- A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- B. Coordinate installation of identifying devices with location of access panels and doors.
- C. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 PIPING IDENTIFICATION DEVICES

- A. Manufactured Pipe Markers, General: Preprinted, color-coded, with lettering indicating service, and showing direction of flow.
1. Colors: Comply with ASME A13.1, unless otherwise indicated.
 2. Lettering: Use piping system terms indicated and abbreviate only as necessary for each application length.
 3. Pipes with OD, Including Insulation, Less Than 6 Inches: Full-band pipe markers extending 360 degrees around pipe at each location.
 4. Pipes with OD, Including Insulation, 6 Inches and Larger: Either full-band or strip-type pipe markers at least three times letter height and of length required for label.
 5. Arrows: Integral with piping system service lettering to accommodate both directions; or as separate unit on each pipe marker to indicate direction of flow.
- B. Pretensioned Pipe Markers: Precoiled semirigid plastic formed to cover full circumference of pipe and to attach to pipe without adhesive.
- C. Shaped Pipe Markers: Preformed semirigid plastic formed to partially cover circumference of pipe and to attach to pipe with mechanical fasteners that do not penetrate insulation vapor barrier.
- D. Self-Adhesive Pipe Markers: Plastic with pressure-sensitive, permanent-type, self-adhesive back.
- E. Plastic Tape: Continuously printed, vinyl tape at least 3 mils thick with pressure-sensitive, permanent-type, self-adhesive back.
1. Width for Markers on Pipes with OD, Including Insulation, Less Than 6 Inches: 3/4 inch minimum.
 2. Width for Markers on Pipes with OD, Including Insulation, 6 Inches or Larger: 1-1/2 inches minimum.

PART 3 - EXECUTION

3.1 APPLICATIONS, GENERAL

- A. Products specified are for applications referenced in other Division 21 Sections. If more than single-type material, device, or label is specified for listed applications, selection is Installer's option.

3.2 PIPING IDENTIFICATION

- B. Install manufactured pipe markers indicating service on each piping system. Install with flow indication arrows showing direction of flow.
1. Pipes with OD, Including Insulation, Less Than 6 Inches: Self-adhesive pipe markers. Use color-coded, self-adhesive plastic tape, at least 1-1/2 inches wide, lapped at least 1-1/2 inches at both ends of pipe marker, and covering full circumference of pipe.
 2. Pipes with OD, Including Insulation, 6 Inches and Larger: Self-adhesive pipe markers. Use color-coded, self-adhesive plastic tape, at least 1-1/2 inches wide, lapped at least 3 inches at both ends of pipe marker, and covering full circumference of pipe.
- C. Stenciled Pipe Marker Option: Stenciled markers may be provided instead of manufactured pipe markers, at Installer's option. Install stenciled pipe markers with painted, color-coded bands or rectangles complying with ASME A13.1 on each piping system.
1. Identification Paint: Use for contrasting background.
 2. Stencil Paint: Use for pipe marking.
- D. Locate pipe markers and color bands where piping is exposed in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior non-concealed locations as follows:
1. Near each valve and control device.
 2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
 3. Near penetrations through walls, floors, ceilings, and non-accessible enclosures.
 4. At access doors, manholes, and similar access points that permit view of concealed piping.
 5. Near major equipment items and other points of origination and termination.
 6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
 7. On piping above removable acoustical ceilings. Omit intermediately spaced markers.

3.3 ADJUSTING

- A. Relocate mechanical identification materials and devices that have become visually blocked by other work.

3.4 CLEANING

- A. Clean faces of mechanical identification devices and glass frames of valve schedules.

END OF SECTION 210553

SECTION 21 13 13 SPRINKLER SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Provide a wet pipe automatic sprinkler system as specified herein, as shown on the Drawings and as needed for a complete and proper installation. Product specific requirements are contained herein; Section 210500, General Provisions for Fire Protection Systems Work, shall be referred to for general requirements.

1.2 DESIGN REQUIREMENTS

- A. Based on the fire protection (sprinkler) drawings provided in the Contract Documents, a third party professional engineer licensed in NY State (not a direct employee) having 5 years experience in the design and installation of fire protection systems shall be engaged by the Contractor to provide hydraulic calculations and Drawings meeting the design parameters. The Drawings shall comply with applicable codes and incorporate the final pipe sizes, pipe locations, and sprinkler head locations for the fire protection system after coordination. The prepared Drawings and calculations will be reviewed by the original Engineer of Record to ensure conformance with the Design parameters.
- B. The Contractor's engineer is responsible for all subsequent revisions/amendments and incorporating as-built conditions.

1.3 SUPPLEMENTAL SUBMITTALS

- A. Submit copies of all permits issued by the Local Authority Having Jurisdiction (AHJ).
- B. Shop Drawings
 - 1. Complete sprinkler system layout indicating the locations of sprinkler heads, devices, and accessories. Include separate details of special or not easily visualized piping arrangements and inspector's test valves and connections.
- C. Test Reports as specified in the Field Quality Control Article.
- D. Certifications:

1. Certification of Installation: Submit certificate upon completion of sprinkler work, which indicates that work has been tested in accordance with NFPA 13-2013 or above, as amended by Chapter 9 of International Building Code, International Fire Code, International Existing Building Code, Uniform Code Supplements, and also that system is operational, complete and has no defects.
 2. Certificate of Completion of Piping Painting.
 3. Certificates of Calibration for all test equipment.
 4. Welders Qualifications/Certifications
 5. Welding Procedure Compliance with NFPA
- E. Maintenance data: Include an instruction manual describing the operation and maintenance of the system in the maintenance manual.
- F. Maintenance materials: Sprinkler heads

1.4 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards

1. NFPA Compliance: Install fire protection systems in accordance with NFPA 13: Standard for the Installation of Sprinkler Systems.
2. UL Compliance: Provide sprinkler products in accordance with UL standards; provide UL label on each product.
3. The New York State Uniform Fire Prevention and Building Code (the "Uniform Code") comprising of the International Building Code (the "2018 IBC"), the International Plumbing Code (the "2018 IPC"), the International Mechanical Code (the "2018 IMC"), the International Fuel Gas Code (the "2018 IFGC"), the International Fire Code (the "2018 IFC"), the International Property Maintenance Code (the "2018 IPMC"), the International Existing Building Code (the "2018 IEBC") and the Uniform Code Supplement published by New York State: Comply with the requirements of the IBC, IEBC, IFC, The Division of Fire Prevention of the Fire Department and all other public authorities having jurisdiction.

4. Fire Department/Marshal Compliance: Install sprinkler systems in accordance with local regulations of Fire Department or Fire Marshal.
- B. All gauges, instruments and test devices shall be provided with a certificate of calibration and calibration curve or letter indicating that a minimum of five (5) test points have been calibrated. The certificate and letter must show the date of last calibration. The calibration date must be within a year of the testing date.

PART 2 - PRODUCTS

2.1 MATERIALS AND MANUFACTURERS

A. General

1. Provide piping materials and factory fabricated piping products of sizes, types, pressure and temperature ratings, and capacities as indicated on the final approved Drawings and these specifications. Sizes of risers, mains, and sub-mains are not to be changed from those shown on the Contract Drawings,
2. Provide fittings of materials that match pipe materials used in the sprinkler systems.

B. Identification: Provide identification complying with the following listing:

1. Fire Protection Piping: Plastic pipe markers (color identification: red).

C. Piping: All sprinkler piping shall be UL Listed and FM approved. Provide pipes, fittings, specialties, supports and anchors as shown on the Drawings, and complying with the following listing:

1. Aboveground Pipe, Within the Building

- a. In buildings not exceeding 300 ft in height above grade and for pressure up to 300 psi, pipe shall be schedule 40 standard black steel as per ASTM A53, A135, A795.

1) Pipe sizes 2½" and above

- a) Schedule 40 piping with threaded ends, roll-grooving, or welded joints and fittings.

2) Pipe sizes 2" and below

- a) Schedule 40 piping with threaded ends, roll-grooving, or welded joints and fittings.
 - b. Fittings shall be black, threaded malleable cast iron or flanged cast steel and shall have a pressure rating of 300 psi water working pressure. Pressure ratings shall be cast in or on the fittings.
 - c. All welded connections must be performed off site in a shop and be done in accordance with NFPA 51B.
- D. Hangers & Supports: Adjustable steel clevis hangers, adjustable steel band hangers or adjustable band hangers for horizontal-piping hangers and supports.
1. Two-bolt riser clamps for vertical piping supports.
 2. Steel turnbuckles and malleable iron sockets for hanger-rod attachments.
 3. Concrete inserts, top-beam C-clamps, side beam or channel clamps or center beam clamps for building attachments.
- E. Sprinkler Head
1. Provide sprinkler head of type indicated on Drawings, and in accordance with the following listing. Provide fusible links for 165°F or heat responsive, frangible glass bulb design rated at 155°F unless otherwise indicated on the Drawings. Wet or dry sprinklers that utilize O-rings as seals are not to be used on projects. O-ring sprinklers can degrade over time. These sprinkler heads can corrode, or minerals, salts, and other contaminants in water can affect the polymeric rubber O-ring seals. These factors could cause the sprinkler heads to not activate in a fire. Heads that use Teflon coated Belleville metallic seals rather than a rubber O-ring are to be used.

Upright
Sidewall Horizontal Concealed Including Cover Plate

- a. Finishes for Upright, Pendent and Recess Pendent: chrome plate for occupied areas, cast or plain brass for unoccupied areas.
- b. Sprinkler Cabinet and Wrench: Provide steel, baked red enameled, sprinkler box with capacity to store sprinkler heads and wrench.

2. Approved Manufacturers:

- a. Firematic Sprinkler Devices, Inc.
- b. Anvil International/Anvil Star
- c. Viking Corp.
- d. Reliable Automatic Sprinkler Co.
- e. Victaulic Co. of America.
- f. Tyco Fire Suppression & Building Products
- g. Globe Fire Sprinkler Corporation
- h. OR Approved Equals

F. Pipe Escutcheons

1. Pipe escutcheons shall have inside diameter closely fitting pipe outside diameter or outside of pipe insulation where pipe is insulated. Select outside diameter of escutcheon to completely cover pipe penetration hole in floors, walls, or ceilings; and pipe sleeve extension, if any. Escutcheons shall be cast or sheet brass, solid or split-hinged, with brass set screw. Provide chrome finish for occupied areas exposed to view.
2. Manufacturers:
 - a. Zurn Industries, Inc.
 - b. McGuire Mfg. Co.
 - c. OR Approved Equals

G. Pipe Sleeves: Provide pipe sleeves of one of the following. Pipe sleeve must be appropriate type and thickness for the UL firestopping assembly selected:

1. Sheet-Metal: Fabricate from galvanized sheet metal; round tube closed with snaplock joint, welded spiral seams, or welded longitudinal joint. Fabricate from the following gauges: 3" and smaller, 20 gage minimum; 4" to 6", 16 gage; over 6", 14 gage minimum.

2. Firestop penetration materials for sealing sleeves shall be listed by Underwriters Laboratories and if not listed have MEA or OTCR approval. The materials shall be as specified in Section 07270. For pipes passing through fire-rated floor, cast-in place firestop device with Underwriters Laboratories listing, and if not listed have MEA or OTCR approval, is permitted as an acceptable sleeve alternative to a metallic sleeve with firestopping material. The cast-in place device is a one-step firestopping process that does not require additional firestop penetration materials for sealing the sleeves. The device shall be installed where required for sleeving purposes. The cast-in place firestop device shall not be used for wall applications.
3. Materials for sealing space between each pipe and sleeve through non-rated interior walls shall consist of mineral wool and sealant.

2.2 PAINTING

A. Paints used on dedicated sprinkler piping shall not:

1. Exceed the VOC content limits established in the Green Seal Standard GS-11 Paints, first edition, May 20, 1993.
2. Exceed the VOC content limit of 250 g/L established in the Green Seal Standard GC-03, Anti-Corrosive paints, second edition, January 7, 1997.

B. Provide colors indicated in Paragraph 3.03.C

1. Prime coat - Acrylic primer such as Tnemec 115 Unibond DF or Benjamin Moore D.T.M. Acrylic Low Lustre WP25 - 1.2 Mills DFT
2. Two Finish coats - Semi-Gloss Acrylic Latex - 1.3 Mills DFT.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Approval of Sprinkler System: All necessary permits for work in connection with the installation of the sprinkler system shall be obtained by the Contractor before commencing any of the sprinkler work.

B. Installation of Identification

1. Install fire protection signs on sprinkler system in accordance with 2017 New York State Uniform Fire Prevention and Building Code, NFPA 13 requirements.
2. Each valve in the sprinkler system shall be tagged in accordance with the requirements of The 2017 New York State Fire Prevention and Building Code.

C. Piping Installation

2. Comply with requirements of NFPA 13 for installation of sprinkler piping materials. Install piping products where indicated, in accordance with manufacturer's written instructions and in accordance with recognized industry practices to ensure that piping systems comply with requirements and serve intended purposes.
3. Coordinate with other work including plumbing piping, as necessary to interface components of sprinkler piping properly with other work.
4. Install drain piping at low points of piping systems and at the alarm valve, a valve drain connection that will be carried down to the floor to discharge into the nearest floor drain, unless otherwise shown on the Drawings. Low points of sprinkler piping that cannot be drained through the alarm valve drain or when there is no alarm valve shall also be provided with drains as may be shown on the Drawings or as required.
5. Install valved hose connections of sizes indicated, or 3/4" size if not otherwise indicated, on sprinkler at ends of branch lines and cross mains at locations where indicated on the Drawings.
6. Install Inspector's test connection where indicated, or at most remote point from riser.
7. All parts of the sprinkler system that may be exposed to frost shall be protected from freezing by any of the following methods:
 - a. The piping shall be frost-proofed with insulation having a thermal conductance of 0.1 Btu/hr per square foot of surface per degree F at a mean temperature of 70°F to 75°F (21°C to 24°C). Insulation shall be protected to prevent water infiltration, and when exposed to the weather the insulation shall be covered with a 45 pound (20kg) roofing felt jacket or equivalent.

- b. Electric tracers may be used in conjunction with the insulation.

D. Installation of Sprinkler Head

- 1. Install sprinkler head at the proper position shown on the Drawings, or as required. Install concealed type sprinkler heads with factory painted white cover plate in areas with suspended ceilings. Install recessed type sprinkler head with manufacturer supply escutcheon.
- 2. Install sprinkler piping, heads, and all other items and accessories to clear electric lighting fixtures.

- E. Installation of Pipe Escutcheons: Install pipe escutcheons on each pipe penetration through floors, walls, partitions, and ceilings. Secure escutcheon to pipe or insulation so escutcheon covers penetration hole, and is flush with adjoining surface.

3.2 CLEANING

- A. Clean dirt and debris from sprinklers.
- B. Remove and replace sprinklers having paint other than factory finish.

3.3 FIELD PAINTING

- A. Paints and coatings used in the interior of building to mark piping for identification purposes shall not exceed the VOC content limits established in B and C.
- B. For all materials, manufactured products and equipment requiring field paint, paint used shall be:
 - 1. In compliance with Federal regulations and with the regulations of the State of New York.
 - 2. In compliance with Part 205, "Architectural Surface Coatings", Department of Environmental Conservation, State of New York, governing the emission of Volatile Organic Compounds.
 - 3. Compatible with the finish painting for the respective product and the condition of use.
- B. To meet the provisions of paragraph A above for interior applications, use paints and coatings that comply with the

following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA method 24) and the following chemical restrictions:

1. Flat Paints and Coatings: VOC not more than 50 g/L.
2. Non-Flat Paints and Coatings: VOC not more than 150 g/L.
3. Anti-Corrosive Coatings: VOC not more than 250 g/L.
4. Varnishes: VOC not more than 350 g/L.
5. Clear Floor Finishes: VOC not more than 100 g/l.
6. Waterproof Sealers: VOC not more than 250 g/l.
7. Sanding Sealers: VOC not more than 275 g/l.
8. All other Sealers: VOC not more than 200 g/l.
9. Stains: VOC not more than 250 g/L.
10. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
11. Restricted Components: Paints and coatings shall not contain any of the following:
 - a. Acrolein.
 - b. Acrylonitrile.
 - c. Antimony.
 - d. Benzene.
 - e. Butyl benzyl phthalate.
 - f. Cadmium.
 - g. Di (2-ethylhexyl) phthalate.
 - h. Di-n-butyl phthalate.
 - i. Di-n-octyl phthalate.
 - j. 1,2-dichlorobenzene.
 - k. Diethyl phthalate.
 - l. Dimethyl phthalate.
 - m. Ethylbenzene.
 - n. Formaldehyde.
 - o. Hexavalent chromium.
 - p. Isophorone.
 - q. Lead.
 - r. Mercury.
 - s. Methyl ethyl ketone.
 - t. Methyl isobutyl ketone.
 - u. Methylene chloride.
 - v. Naphthalene.
 - w. Toluene (methylbenzene).
 - x. 1,1,1-trichloroethane.
 - y. Vinyl chloride.

- C. The provisions of paragraphs A and B above shall supersede field-applied paints specified in the respective technical Sections of these Specifications, where in conflict.

D. Paint exposed sprinkler/fire standpipe piping with a prime coat and two finish coats as specified in Section 09900: Painting. Protect sprinkler heads during painting with small paper bags. Painting of sprinkler/fire standpipe piping, hangers, and all other items and accessories shall conform to the code requirements.

E. Painting of Dedicated Piping:

1. Dedicated piping to a standpipe system such as risers, cross-over mains, cross-over connections and the handles of valves fitted into the dedicated piping shall be painted red prior to the hydrostatic pressure test of the system. Painting shall be applied whether the pipe is ultimately concealed or remained exposed.
2. Cross-over mains, cross-over connections and risers of a standpipe system that are exposed during alterations and the handles of existing valves serving the standpipe system shall be painted red. If a hydrostatic pressure test is required, painting of pipe shall be done before the test.

3.4 GLUE, ADHESIVE AND SEALANT MATERIALS

A. The following list of adhesive and sealant V.O.C limits is for the Contractor's use in selecting adhesives and sealants if specified products are not available or if the Contractor is proposing alternate adhesives and sealants.

B. For interior applications (for anything within the building's weatherproofing system), use adhesives and sealants that comply with New York State V.O.C. requirements or the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA method 24), whichever is more stringent:

1. Metal to Metal Adhesives: 30 g/L.
2. VCT and Asphalt Tile Adhesives: 50 g/L.
3. Cove Base Adhesives: 50 g/L.
4. Gypsum Board and Panel Adhesives: 50 g/L.
5. Multipurpose Construction Adhesives: 70 g/L.
6. Fiberglass Adhesives: 80 g/L.
7. Structural Glazing Adhesives: 100 g/L.
8. Top and Trim Adhesives: 250 g/l.
9. Contact Adhesive: 80 g/L.
10. Special Purpose Contact Adhesive: 250 g/l.
11. Architectural Sealants: 250 g/L less water.
12. Sealant Primers for Nonporous Substrates: 250 g/L less water.

13. Sealant Primers for Porous Substrates: 775 g/L less water.

3.5 FIELD QUALITY CONTROL/INTERDISCIPLINARY TESTS AND FUNCTIONAL PERFORMANCE TESTS

- A. Cooperate with the Owner and provide all required access to facilitate all testing and inspections required by the Owner for quality control and Regulatory Compliance.

- B. Sprinkler Piping Flushing

Prior to connecting sprinkler risers for flushing, flush water feed mains, lead-in connections and control portions of sprinkler piping. After fire sprinkler piping installation has been completed and before piping is placed in service, flush entire sprinkler system, as required to remove foreign substances, under pressure as specified in NFPA 13. Continue flushing until water is clear, and check to ensure that debris has not clogged sprinkler heads.

- C. Test

1. Hydrostatic Testing: After flushing system, test fire sprinkler piping hydrostatically, for one (1) hour period, at not less than 200 psi or 50 psi in excess of the system working pressure, whichever is greater. Check system for leakage of joints. Measure hydrostatic pressure at low point of each system or zone being tested.
2. Repair or replace piping system as required to eliminate leakage and to demonstrate compliance with NFPA standards.
3. Test the entire sprinkler installation, including sprinkler alarm system, in accordance with the requirements of the Building Code and any other public authority having jurisdiction. All tests shall be performed as part of this contract.

- D. Interdisciplinary Pre-Start-Up and Start-Up Tests/Inspections

The Contractor shall conduct interdisciplinary pre-start up and start up tests/inspections (e.g. verifying correct installation of sprinkler flow detectors and alarm gong) as per the manufacturer's start up procedures. Contractor shall submit signed start up affidavit signed by the factory

authorized service representative certification indicating that all of the manufacturer's pre-start up and start up procedures have been successfully completed.

E. Functional Performance Tests

Contractor shall also submit signed functional performance testing affidavit signed by the factory authorized service representative indicating that all of the manufacturer's functional performance tests (flushing, hydrostatic tests and testing of the sprinkler alarm system activation) have been successfully completed.

3.6 FLOW TEST

A. The sprinkler system shall be flow tested as follows:

1. The main drain valve shall be opened and remain open until the system pressure stabilizes
2. The static and residual pressures shall be recorded on the contractor's test certificate
3. Water flow detecting devices including the associated alarm circuits shall be flow tested through the inspector's test connection and shall result in an audible alarm on the premises within 5 minutes after such flow begins and until such flow stops.
4. All components of the sprinkler system and auxiliary must have been pressure tested as a composite system
5. Discharge tests of the sprinkler system shall be conducted using the fire department connections (Fire Department connections)
6. Pressure gauges shall be installed at critical points and readings shall be taken under various modes of auxiliary equipment operation.
7. Water flow alarm signals shall be responsive to discharge of water through the system test pipes (Fire Department connections) while auxiliary equipment is in each of the possible modes of operation
8. Where sprinkler booster pumps are part of the water supply, testing shall be conducted while the pumps are operating.

END OF SECTION

LIST OF SUBMITTALS

SUBMITTAL	DATE SUBMITTED	DATE APPROVED
Product Data:	_____	_____
1. Manufacturer's Product Data		
2. Installation Instructions		
3. Certificate: Hose Threads		
Shop Drawings:	_____	_____
1. Sprinkler Layout		
2. Hydraulic Calculations		
3. Wiring Diagrams		
Test Reports:	_____	_____
Certificates:	_____	_____
1. Certification of Installation:		
2. Certificate of System Painting Completion		
3. Certificate of Calibration For test equipment		
4. Welder's Qualifications		
5. Welding Procedure		
Maintenance Data:	_____	_____
1. Spare Parts Lists		
2. Instruction Manual		
3. Maintenance Manual		
Maintenance Material:	_____	_____
1. Head		
2. Steel Cabinet		
3. Wrench		
4. Caps and Chains		

* * *

SECTION 220500 - COMMON WORK RESULTS FOR PLUMBING

1.1 SCOPE AND INTERPRETATION

- A. These Specifications and accompanying Drawings provide for the furnishing, setting and connection of roof drain, storm piping and plumbing vent.
- B. The specifications and Drawings require the Contractor to provide all labor, materials, equipment and appliances to perform of all Work pertaining or incidental thereto, which is needed to complete the Work shown on the Drawings and called for in the Specifications.
- C. Scope of Work: The plumbing and drainage work of this contract shall include but shall not be limited to the following systems, equipment and services:
 - 1. Sump pump: Provide new sump pump with discharge piping and all accessories, vales, etc.
 - 2. Storm Water Drainage Piping: Replace existing storm drain and leader as indicated on drawings.
 - 3. Piping, and seismic restraints: To comprise all restraints, hangers, pipe guides, rods, beam clamps, brackets, pipe anchors, other attachments, floor flanges, masonry anchors, bolts, nuts, washers, and other items as required to fully support all piping, gas venting, and equipment installed under this contract inclusive of spring hangers, seismic restraints, where required to meet noise abatement regulations and as necessary to prevent piping vibrations being transmitted to structure.
 - 2. Piping - General: Piping, piping installation or hook-up shall mean a complete installation in all respects including pipe, fittings and other miscellaneous items to make piping systems and equipment operational.
 - 3. Miscellaneous Work: Included shall be all items of materials, piping, controls, wiring and other miscellaneous items not specifically shown on Contract Drawings or called for herein but which are normally furnished and required for a complete installation of this type.

1.2 CODES AND STANDARDS

- A. It shall be unlawful for any person to perform the work referred to under this Plumbing and Drainage Specifications and/or shown on the Plumbing and Drainage Contract Drawings unless such person is a licensed master plumber, partnership, corporation or other business association as permitted by the NYS Building Code and unless such work is

performed under the direct and continuing supervision of a licensed master plumber.

- B. Where requirements for products, materials, systems, equipment, methods and other portion of the work specified herein exceed minimum requirements of regulatory agencies having jurisdiction over the construction work, contractor shall comply with such requirements specified herein, unless specifically approved otherwise by the Authority.

1.3 GUARANTEES AND WARRANTIES

- A. Contractor's Guarantees: The Contractor guarantees that all Work of this Contract is free from all defects, and is as specified, and that should any defects, which cannot be proven to have been caused by improper use, develop within the space of one year from the date of substantial completion of the Work, such defects shall be made good by the Contractor, free of cost to the owner or authorities.
- B. Manufacturer's Warranty: Hermetically sealed compressor units for water coolers, or any other equipment mechanically refrigerated, shall have a five-year warranty. This warranty shall cover the replacing the hermetically sealed compressor unit if it shall become defective within 5 years from the date as defined in the General Conditions. It shall be replaced free of charge, by the manufacturer, to the Authority.

1.4 SUBMITTALS

- A. Formal submission for approval of manufacturer is not required if the Contractor provides equipment as per manufacturer/model number or series listed in the specification. Formal submissions are also not required for materials and appurtenances (ex. sheet metal, pipes, etc.) if the Contractor provides items as defined in the specification. In this case, Contractor must submit affidavit (for record purposes only) stating that listed equipment and/or items as defined in the specification will be provided. Submittals are mandatory for certain critical items and will be so noted in the respective specifications. Submittals are always required to verify capacity. Schedules, installation instructions, startup manuals, operation and maintenance manuals, and shop drawings are always required to be submitted.

1.5 CLEANING AND REPAIR

- A. At the completion of the Work and before the final inspection is made the Contractor shall thoroughly clean all fixtures, apparatus, appurtenances, piping, brass and chrome and nickel-plated work, marble and stone work, and leave these items free from all marks, scratches, stains, and other damage. All pumps, filters, heaters, and other equipment shall be cleaned and left in condition to operate, and the work, as a whole, left in perfect working

order. Remove all tools, debris and excess materials from the premises.

- B. Contractor shall not leave sharp exposed metal edges (bottom of threaded rods, P&D equipment supports, etc.) that could otherwise present safety hazards to the building's occupants/work staff.

END OF SECTION

SECTION 220529 -HANGERS AND SUPPORTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Extent of hangers and support Work is indicated by the requirements of this Section.

1.2 SUBMITTALS

- A. Submit catalog cuts for each different type of hanger and rod, support and accessory.
- B. Submit method of support and hanging for Engineers approval prior to installation.
- C. Submit manufacturer technical data of insert and rod for approval.

1.3 QUALITY ASSURANCE

- B. Manufacturers Standardization Society of The Valve and Fittings Industry (MSS) Compliance: Comply with:
 - MSS SP-58 Pipe Hangers and Supports - Materials, Design and Manufacture.
 - MSS SP-69 Pipe Hangers and Supports - Selection and Application.
 - MSS SP-89 Pipe Hangers and Supports - Fabrication and Installation Practices.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Pipe Hangers:

- a. AAA Technology and Specialties Co., Inc.
- b. ANVIL International
- c. B-Line Systems, Inc.
- d. Carpenter & Patterson, Inc.
- e. Empire Tool & Manufacturing Co., Inc.
- f. Globe Pipe Hanger Products, Inc.
- g. Grinnell Corp.
- h. GS Metals Corp.
- i. Michigan Hanger Co., Inc.
- j. National Pipe Hanger Corp.
- k. PHD Manufacturing, Inc.
- l. PHS Industries, Inc.
- m. Piping Technology & Products, Inc.
- n. OR other approved equals

2. Channel Support Systems:

- a. B-Line Systems, Inc.
- b. Grinnell Corp.; Power-Strut Unit.
- c. GS Metals Corp.
- d. Michigan Hanger Co., Inc.; O-Strut Div.
- e. National Pipe Hanger Corp.
- f. Thomas & Betts Corp.
- g. Unistrut Corp.
- h. Wesanco, Inc.
- i. OR other approved equals

3. Powder-Actuated Fastener Systems:

- a. Gunnebo Fastening Corp.
- b. Hilti, Inc.
- c. ITW Ramset/Red Head.
- d. Masterset Fastening Systems, Inc.
- e. OR other approved equals

2.2 MATERIALS

A. Pipe Hangers and Supports

1. Hangers for horizontal piping (insulated and uninsulated) one inch and smaller, supported from above shall be of malleable iron, adjustable swivel ring type and shall comply with MSS SP-69 Type 6. Hangers shall be Anvil International Fig. 104 or the approved equal of Carpenter & Paterson, Inc, Hilti, Inc, or Cooper B-Line, Inc.
2. Hangers for horizontal piping (insulated and uninsulated) larger than one inch, shall be of carbon steel, adjustable clevis type and shall conform to MSS SP-69 Type 1. Hangers shall be Anvil International Fig. 260, Fig. 260 ISS or the approved equal of Carpenter & Paterson, Inc, Hilti, Inc, or Cooper B-Line, Inc.
3. Supports for vertical piping shall be double bolt riser clamps, complying with MSS SP 69 Type 8 with each end having equal bearing on the building structure located as hereinafter specified. Supports shall be Anvil International Fig. 261 for steel pipe or the approved equal of Carpenter & Paterson, Inc, Hilti, Inc or Cooper B-Line, Inc.
4. Where piping is run near the floor and is supported from the floor, such supports except as otherwise noted shall be of pipe standards with base flange and adjustable top yoke complying with MSS-SP-69 Type 38. Support shall be similar to Carpenter & Paterson, Inc Figure 247 or the approved equal of Anvil International, Hilti, Inc or Cooper B-Line, Inc.
5. Trapeze type hangers shall be made of 2"x2"x1/4" carbon steel angle iron with drilled holes and 1/2" hangers rods. In lieu of an angle iron, a strut

assembly may also be used for the trapeze kind of hanger support.

- B. Expansion bolts for use in existing and new reinforced concrete slabs shall be as follows:
 - 1. "Trubolt" as manufactured by ITW Ramset/Red Head
 - 2. "Kwik Bolts" as manufactured by Hilti, Inc.
 - 3. "Power Stud" as manufactured by Powers Fasteners, Inc.
- C. Fasteners, as required, shall be as follows:
 - 1. Lag screws or Long screws.
 - 2. Long Expansion bolts
 - 3. Bolts and nuts

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Supports shall be adequate to securely support the piping and its contents, to prevent vibration and to provide proper allowance for expansion and contraction of the piping.
- B. All piping running close to or on walls shall be supported by means of hanger suspended from heavy angle iron wall brackets. No wall hooks will be permitted.
- C. Hanger rods shall be of ample size to support the pipe and its contents and shall have machine cut American Standard V-threads. At a minimum hanger rod size shall be the same as that recommended by the hanger manufacturer for each sized hanger. Hangers shall be recessed to approved beam clamps, concrete inserts, steel plates or other approved devices. Expansion shields and bolts shall not be used in the ceilings of cinder concrete, but may be used where the shields and bolts are horizontal.
- D. Where more than two pipes run parallel, the Contractor may install trapeze type hangers, constructed of 2" x 2" x 1/4" angle iron or channel strut " kindorph" and 1/2" hanger rods. Provide holes in the trapeze angle iron as required to accommodate rods for the individual supports. Burning of holes in angle supports is not acceptable. Provide individual supports for piping, where necessary to provide proper pitch. Trapeze type hanger when used with uninsulated copper tubing shall have copper finish. Spacing of trapeze type hangers shall be as required by the smallest size pipe/tube supported by trapeze hanger.

- E. No piping shall be supported from other pipes, ductwork, electric conduit, hung ceiling, cinder concrete or work of other trades.
- G. Overhead horizontal drains or other piping shall be supported by adjustable wrought iron, steel or malleable iron hangers. Double locknuts shall be installed all hangers. The metal decks shall not be used for support of piping or equipment.
- I. Intervals of supports for horizontal piping shall be as follows:
 - 1. Threaded pipe ($1\frac{1}{4}$ " or less) - At 8' intervals
 - 2. Threaded pipe ($1\frac{1}{2}$ " or over) - At 12' intervals
 - 3. Other Materials--As required for structural stability, service and as further stipulated in specifications and Drawings.
- J. Intervals of supports for vertical piping shall be as follows:
 - 1. Threaded pipe: At every other story height, but in no case at intervals greater than 25'.
 - 2. Other materials: As for structural stability and service.
- K. Inserts and Expansion Bolts
 - 1. Piping and equipment, hung from ceilings shall be properly supported from the ceiling slabs by means of required number of inserts. Provide inserts before the pouring of the slabs and expansion bolts after concrete is placed and completely cured.
 - 2. Expansion bolts shall be installed in snug fitting smoothly drilled holes in accordance with the manufacturer's installation instructions. Expansion bolts shall be installed so that the load acts on the bolts in shear and withdrawal. Expansion bolts shall be carefully located in order to eliminate the risk of damage to concrete, steel reinforcement, and other embedded items. Install in concrete after concrete is placed and completely cured.
 - 5. The Contractor shall take every precaution to furnish and set all sleeves, wood boxes or other devices that are required for proper installation of his work, before concrete is poured.

The Contractor is responsible for coordination with other trades and maintaining location of sleeves and inserts during concrete pour.

- L. Methods of Fastening: The following rule, except where otherwise specified, shall be observed throughout the entire work: Where fastenings are made to wood, use long screws or lag screw; to brickwork, cement, stone and marble, approved long expansion bolts; to fire-proof block work, approved toggle bolts, and to iron work, approved bolts and nuts. The use of wood plugs and nailing will not be permitted. Sundries used in connection with galvanized iron shall be galvanized. Those in connection with brass work shall be of brass, finished to match the connecting work.
- M. Cleaning, painting and installation of hangers and supports shall be done before the application of fireproofing material. All hanger and support assemblies in their entirety shall be rust proofed and painted. For material and method of painting, refer to Section 09900 - Painting.

END OF SECTION

LIST OF SUBMITTALS

SUBMITTAL

Product Data:

1. Pipe hangers
2. Expansion bolts

Shop Drawings:

1. Method of Supports

* * *

SECTION 220553 - IDENTIFICATION

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work of this Section includes the following:

1. Pipeline Identification

1.2 SUBMITTALS

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

B. Shop Drawing:

1. Provide list of identification wording, symbols, letter size, and color coding.
2. Valve numbering scheme; valve Schedules: For each piping system to be included in maintenance manuals.

C. Samples: Submit samples of tags and identification markers for each different type of service. Samples shall be submitted and approved before installation.

PART 2 - PRODUCTS

2.1 PIPELINE IDENTIFICATION

A. Identification shall be in accordance with "Scheme for Identification of Piping System ANSI A13.1" and OSHA safety color regulation.

B. Markers shall be snap-on type as manufactured by Seton Nameplate Corp., (Setmark System) EMED Co., Inc., Brimar Industries, Inc., Marking Services Inc. Markers shall completely encircle the pipe with a substantial overlap. No adhesive shall be used. They shall be manufactured of UL approved, self-extinguishing plastic. When the pipe including insulation (if any) is 6" diameter and larger, markers shall be strap on type.

C. Provide identification for piping, and pumps.

D. Pipe shall be lettered in accordance with the schedule below. Provide flow arrows for all piping at each marker. Adjacent to the legend, stencil the size of the pipe. Background and letter colors are as follows: Yellow with black letters, green with white letters, blue with white letters and red with white letters.

STENCIL SCHEDULE

Cold Water	Cold Water	Green
Hot Water	Hot Water	Yellow
Hot Water Return	Hot Water Return	Yellow
Soil Piping	Soil	Green
Waste Piping	Waste	Green

- E. The nature of service of pumps and other apparatus shall be stenciled in 2" high letters unless otherwise directed.

END OF SECTION

LIST OF SUBMITTALS

SUBMITTAL	DATE SUBMITTED	DATE APPROVED
Product Data	_____	_____
1. Each product		
Shop Drawings	_____	_____
1. Identification wording, symbols, letter size, color coding		

* * *

SECTION 221000 -PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Painting..... Section 09900
- B. Drainage..... Section 221319

1.2 SUMMARY

- A. Extent of plumbing piping work is indicated on Drawings and by the requirements of this Section including but is not limited to the following:

- 1. Pipe
- 2. Fittings
- 3. Piping Joints
- 4. Sleeves for Pipes
- 5. Unions
- 6. Escutcheon Plates
- 7. Traps

- B. All pipe and pipe fittings that convey water for human consumption must be certified for meeting the requirements of the federally mandated Reduction of Lead in Drinking Water Act of 2014 (not more than a weighted average of .25% lead). Regardless of the pipe manufacturer listed in these specifications, provide pipe and pipe fittings that meet the requirements of the act. All solder used during installation of piping associated with the potable water system designed for human consumption must also meet the requirements.

1.3 CODES AND STANDARDS

- A. Comply with applicable portions of the Building Code of the City of New York. Where requirements for products, materials, equipment, methods and other portion of the work specified herein exceed minimum requirements of NYC Building Code, contractor shall comply with such requirements specified herein, unless specifically approved otherwise by the Authority.
- B. Standards listed below are referenced in this section.

1. American Society for Testing and Materials (ASTM)
2. American Standards Association (ASA)
3. American National Standards Institute (ANSI)
4. United States of America Standards Institute (USASI)
5. Cast Iron Soil Pipe Institute (CISPI)
6. American Water Works Association (AWWA)
7. NSF International

C. Approved Agency Certification: Certification and listing by an Approved Agency in accordance with State University Construction Fund are acceptable for the intended use.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pipe materials properly protected, and undamaged.
- B. Properly protect all piping so as to prevent damage to the pipe or the introduction of foreign material into the pipe. For the purpose of protecting piping from pre-installation contamination, all piping shall be shipped to job site with suitable caps, sheet metal covers or plugs. Pipe caps shall not be removed until just before installation.
- C. Examine all pipe and fittings before laying. Do not install any piece that is found to be defective.

1.5 SUBMITTALS

- A. Product Data
 1. Pipes & fittings
- B. Submit Shop Drawings for all piping installations.
- C. Pipe Schedule: Itemize pipe and fitting materials for each specified application.
- D. Sample: Polypropylene pipe & fittings with the required marking.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Piping shall conform to the following:

1. Steel Pipe

- a. Black steel pipe and galvanized steel pipe shall be Grade A, seamless, electric resistance welded pipe, or type F furnace butt-welded, and shall be made in accordance with the current Edition of the ASTM A53. Pipe shall be free from scale, and rust, injurious sand marks, blisters, scale pits, laminations, imperfect welds, or other defects that might affect its strength, appearance or ability to resist corrosion. The maker's name shall be rolled or stamped in the metal at intervals of each length of pipe 2" and larger, and stamped on a metal tag secured to each bundle of pipe 1½" and smaller.
- b. Unless otherwise specified or indicated on Drawings, black steel pipe shall be standard weight and galvanized steel pipe shall be Schedule 40 galv. pipe.
- c. Available Manufacturers:

U.S. Steel Co.
Sawhill Tubular Co.
North Star Steel
Sharon Tube Co.
Koppel Steel Corp.
Wheatland Tube Company

B. Fittings and Joints

1. Fittings for Galvanized Pipe:

- a. Fittings and couplings shall be galvanized cast-iron, recessed and threaded drainage fittings conforming to ASTM A126, Class B, with smooth interior waterway and with threads tapped so as to give a uniform grade to branches of not less than 1/4" to the foot and keep the vertical lines plumb.
- b. Fittings for screwed vent piping shall be maleable iron recessed and threaded drainage fittings.
- c. Roll Grooved Ends:
 - 1) Housing: Ductile iron: ASTM A536 Grade 65-45-12 with factory grooved ends designed to

accept manufacturer's couplings; EPDM gaskets.

- 2) Manufacturers: Victaulic, Anvil International Inc, TYCO Grinnell Mechanical Products, Shurjoint Piping Products.

C. Pipe Nipples

1. All pipe nipples shall be of the same materials as the connecting piping.
2. The use of close nipples is prohibited

D. Unions

1. Unions 2" and smaller shall be threaded. Unions 2¹/₂" and larger shall be flanged.
2. Threaded unions on copper or brass pipe shall be brass, ground joint suitable for 300 pounds W.S.P.
3. Threaded unions on steel pipe, unless otherwise specified, shall be of malleable iron with bronze ground seats suitable for 300 pounds W.S.P.
4. Flanged unions shall be cast iron for steel pipe, and brass for copper or brass pipe, gasket type suitable for 150 pounds W.S.P.
5. Flanged unions shall be provided with the necessary steel bolts, nuts and gaskets.
6. All unions used on galvanized piping shall be galvanized.
7. All unions used on chromium plated piping shall be chromium plated.
8. Unions shall be as manufactured by

Anvil International
NIBCO Inc.
Ward Manufacturing LLC
The Viking Corporation

E. Dielectric Fittings/Unions

1. Unions shall be rated at 250 psi at 180°F and shall meet the requirements of ASME/ANSI B16.39. Pipe threads

shall be in accordance with ASME/ ANSI B2.1 and solder ends shall be suitable for brazing.

2. Flange fittings shall have a minimum rating of 175 psi and shall conform to ASME/ANSI B16.24 (Bronze), ASME/B16.42 (Iron).

3. Manufacturers:

Mueller Industries
Capitol Mfg. Co.; Division of Harsco Copr.
Eclipse, Inc.
Perfection

- J. Pipe Sleeves: Provide pipe sleeves of one of the following. Pipe sleeve must be appropriate type and thickness for the UL firestopping assembly selected:

1. Sleeves and materials for sealing sleeves for gas piping through exterior walls and floor slabs on earth shall be as specified and approved by the Gas Company.
2. Sheet-Metal: Fabricate from galvanized sheet metal; round tube closed with snaplock joint, welded spiral seams, or welded longitudinal joint. Fabricate from the following gauges: 3" and smaller, 20 gage minimum; 4" to 6", 16 gage minimum; over 6", 14 gage minimum.
3. Steel-Pipe: Fabricate from Schedule 40 galvanized steel pipe; remove burrs.
4. Iron-Pipe: Fabricate from cast-iron or ductile-iron pipe; remove burrs.
5. Firestop penetration materials for sealing sleeves shall be listed by Underwriters Laboratories and if not listed have MEA or OTCR approval. The materials shall be as specified in Section 07270. For pipes passing through fire-rated floor, cast-in place firestop device with Underwriters Laboratories listing, and if not listed have MEA or OTCR approval, is permitted as an acceptable sleeve alternative to a metallic sleeve with firestopping material. The cast-in place device is a one-step firestopping process that does not require additional firestop penetration materials for sealing the sleeves. The device shall be installed where required for sleeving purposes. The cast-in place firestop device shall not be used for wall applications.
6. Material for sealing spaces between pipe and sleeve through foundation walls below grade shall be Link-Seal

Type "C" as manufactured by Thunderline Corp; Belleville, Mich. Seals shall be modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and sleeve. Links shall be loosely assembled with bolts to form a continuous rubber bolt around the pipe with a pressure plate under each bolt head and nut.

Link-Seal pressure plates shall be Type "C" (insulating type) to provide for electrical insulation and cathodic protection.

7. Materials for sealing space between each pipe and sleeve through non-fire rated exterior walls above grade shall be Non-shrinking cement. Materials for sealing space between each pipe and sleeve through non-rated interior walls shall consist of mineral wool and sealant.
8. Waterproof sleeves shall be Link-Seal Wall Sleeve as manufactured by Thunderline Corp, or MetraSeal wall sleeve by the Metraflex Co.

K. Traps

1. Traps associated with drains placed in slab on grade shall be deep seal type with floor cleanout as J.R. Smith Fig 7231S, Zurn Z-1012-1406-BP with adjustable housing ferrule and cover or approved equal.

- L. Pipe escutcheons shall have inside diameter closely fitting pipe outside diameter or outside of pipe insulation where pipe is insulated. Select outside diameter of escutcheon to completely cover pipe penetration hole in floors, walls, or ceilings; and pipe sleeve extension, if any. Escutcheon plate types shall be as follows:

1. Galvanized cast-iron with set screw as manufactured by Anvil International, Fig. No. 395 or Carpenter & Paterson, Inc. Submit manufacturer product technical data.

PART 3 - EXECUTION

3.1 PIPE AND FITTING SCHEDULE

- A. Sanitary Piping, Waste & Vent: Above Ground and House Drain Lines - Pump Discharge - Interior

1. Galvanized steel pipe schedule 40, with threaded drainage fittings; Roll grooved ends, grooved pipe fittings in sizes 2" and above.

3.2 INSTALLATION

A. Piping (General)

1. The run and arrangements of all pipes shall be approximately as shown on drawings or specified and as directed during installation, and shall be as straight and direct as possible, forming right angles or parallel lines with building walls and other pipes, and neatly spaced. No pipe shall be installed where the headroom will be interfered with unless the conditions are such that it is unavoidable and permission is obtained from the Authority. Offsets will be permitted where walls reduce in thickness or beams interfere with direct runs; offsets shall be made at an angle of 45° to the vertical; in no case shall the space between the pipes, partitions, walls, etc., exceed 5". All exposed risers shall be erected plumb, standing free, close to and parallel with walls and other pipes and be uniformly spaced. All horizontal runs of piping hung from structural floor, slab or floor beams shall be erected as closely as possible to bottom of floor slabs, ceilings, or I-beams as the case may be. In no case shall the headroom, beneath the pipe, be less than (7'-0") where the pipe is installed more than (1'-0") from wall, partition, etc., except where piping is required to be installed in Boiler Room and Mechanical spaces above floor. Horizontal piping shall be so graded as to drain to the low points and water lines to drain bibbs. All piping installed in floor shall be painted with a heavy coat of asphaltum. All piping shall be installed with ample space for pipe covering. All exposed plumbing piping in the Kitchen Areas shall be chrome plated brass pipe except for gas line. Provide threaded fittings. Chrome (silver) paints will not be accepted.
2. Roughing under ground or concealed in the floor or wall construction shall be properly installed, tested and inspected before any of the roughing is covered up. Should any work be covered up before being inspected and tested, it shall be uncovered and recovered at the expense of the Contractor. Plugged fittings shall be installed when called for. Reducer fittings shall be used in making reductions in sizes of pipes; bushings will not be allowed. Suitable air chambers or Water Hammers Arresters shall be provided as called for in other sections.
3. All lines of piping and branches for fixtures passing through or in connection with waterproofing shall be brought to the proper locations and levels so that

fixtures and piping may be installed without disturbing the waterproofing.

4. For work in existing buildings the following addition requirements shall be adhered to:
 - a. Piping shall run as straight as possible with the fewest number of changes in direction, with such variations from the layout shown on the Drawings as conditions at the premises may require, as approved by the Authority at no extra cost to the Authority. Provide piping without sharp bends, quick changes of sections, pockets or bushings.
 - b. The locations of all existing piping which are indicated on the Drawings are approximate. The Contractor shall investigate and ascertain the exact locations of such piping and make whatever minor variations in runs of new piping that may be required at no extra cost to the Authority.
 - c. Contractor shall consider the location of all equipment, ductwork, piping, electric conduits, supports, steel work, etc., and all new piping shall be installed without interference therewith.
 - d. Wherever existing branch piping interfere with installation of new branch piping, the existing branch piping shall be removed and re-routed to accommodate the new work. The rerouted work shall be of new material.
 - e. All new extensions and relocations of existing piping systems shall be concealed in existing or new walls, floors, ceilings, pipe chases or as otherwise specified.
 - f. Unused dead ended soil, waste and vent piping shall be removed as far as each branch, main, stack, etc., and capped or plugged concealed in hung ceilings, below floors or behind walls.
 - g. All individual hot and cold water branches to and from new and existing mains or risers shall be valved.

B. Piping Joints

1. Joints in Ductile Iron Pipe:

- a. Push-On Joints: Assemble push-on joints using lubricant furnished by manufacturer. Guide plain end of pipe into bell until contact is made with gasket. Exert sufficient force to drive pipe home until penetration is made to depth recommended by manufacturer.
 - b. Mechanical Joints: Assemble mechanical joints in accordance with Method of Installation, AWWA C111, Appendix A. Tighten all bolts by means of torque wrenches such that the follower is brought up evenly. Disassemble, clean and reassemble joint if effective sealing is not obtained at specified torques.
 - c. Joints for ductile iron mechanical joint pipe shall be made by using ductile iron mechanical joint retainer glands.
2. Joints for precast reinforced concrete pipe shall be watertight and shall be made by using approved rubber gaskets. Joints, including rubber gaskets, shall conform to all the requirements of ASTM C443, Latest Edition.
 3. The joints of steel and brass piping shall be screwed joints of full length and threads shall be NPT conforming to the requirements of ASME/ANSI B2.1. All pipes shall be screwed close up to their shoulders. The use of lamp wick is prohibited in threaded joints. All burrs shall be removed. Pipe joint cement or Teflon tape shall be used only on male threads.
 3. Joints between galvanized steel and cast-iron pipes shall be caulked joints as specified for cast iron piping.
 4. Unions shall be used to connect equipment (pumps, circulators, tanks, meters, etc.) to water lines. The union shall be installed as close to the equipment as practical. Where valves are adjacent to equipment, union shall be on down stream side of valves.
 5. Dielectric fittings and unions shall be installed where ferrous piping joins copper tubing or brass piping.

C. Sleeves for Pipes

1. General: All plumbing pipes passing through floors, roofs, walls, partitions, furring, beams, trenches, and

wherever else indicated on drawings shall be provided with sleeves installed and maintained by the Contractor.

Core drilled holes shall be provided with sleeves. Where plumbing pipes pass through potentially wet floors that do not have membrane waterproofing such as toilet rooms, cafeteria kitchens, serving areas, dish washing room, janitor's sink closet, mechanical equipment rooms, pipe chases and areas that are provided with fire protection sprinkler systems, the Contractor shall install sleeves of galvanized steel pipe with welded clips or equivalent at bottom ends for securing sleeves to form work and shall project one inch above finished floors, and shall be caulked watertight.

2. For interior walls and floors and for pipes through roof, the space between each installed pipe and its sleeve shall be sealed with a three hour rated fire stop penetration material. Fire stop materials shall be installed in accordance with the instructions of the manufacturer.

For floors and for pipes and for pipes through roof and not in walls: Cast-in fire stop device with Underwriters Laboratories listing and Material and Equipment Acceptance (MEA) approval or Approved Agency Certification listed and/or label is permitted as an acceptable sleeve alternative to a metallic sleeve with fire rated sealing caulk. The cast-in device is a one-step fire stopping process that shall not require additional fire stop penetration materials for sealing the sleeves. The device shall be installed where required for sleeving purposes.

4. Sheet Metal Sleeves

- a. Sleeves for pipes passing through floors, partitions, hung or furred ceilings, shall be installed with 1/2" maximum clearance all around pipes. Each sleeve for a pipe passing through an interior floor slab shall be fitted with a one-inch flange, or equivalent, at the bottom end for the purpose of securing it to the form work or sheet metal deck.

The sleeve shall finish flush with the top of the finished floor. Sleeves for pipes passing through partitions, hung or furred ceilings shall be of one-piece construction and shall finish flush with the finished surface.

- b. Sleeves installed for pipes passing through vent ducts shall be securely fastened, soldered and made airtight.

5. Pipe Sleeve: Install pipe sleeves for pipes passing through roofs, concrete beams, brick walls, foundation walls and floor slabs on earth. Sleeves shall be installed with 1/2" maximum clearance all around pipe and shall finish flush with the surfaces penetrated. Pipe sleeves for pipes through roof shall be made of service weight cast iron only.
 6. Sleeves through foundation walls below grade shall be provided under General Construction Work.
- E. Traps: Install traps full size of the piping to which it connects as indicated on Drawings or as required. All traps, except integral trap with floor drains, shall have cleanout.
- F. Escutcheon Plates
1. Install galvanized cast iron or brass escutcheon plates with set screw on concealed pipes passing through walls, partitions, floors and on exposed to view piping in unfinished rooms and spaces. Material shall be appropriate for the material to prevent galvanic reaction (i.e. brass or chrome plated brass escutcheon for copper pipe)
 2. Plates shall fit snugly around the pipes or insulation so escutcheon covers penetration hole, and is flush with adjoining surface.

END OF SECTION

* * *

LIST OF SUBMITTALS

SUBMITTAL

Product Data:

1. _____ Escutcheons

2. _____ Pipe & _____ fittings

Shop Drawings

Schedule:

1. Pipe & fittings

* * *

SECTION 221429 - SUMP PUMP

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following sump pumps and accessories, inside the building, for building storm drainage systems:
 - 1. Submersible sump pumps.

1.3 SUBMITTALS

- A. Product Data: For each type and size of sump pump specified. Include certified performance curves with operating points plotted on curves, and rated capacities of selected models, furnished specialties, and accessories.
- B. Shop Drawings: Diagram power, signal, and control wiring.
- C. Operation and Maintenance Data: For each sump pump to include in emergency, operation, and maintenance manuals.

1.4 QUALITY ASSURANCE

- A. Product Options: Drawings indicate size, profiles, and dimensional requirements of sump pumps and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements."
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Retain shipping flange protective covers and protective coatings during storage.

- B. Protect bearings and couplings against damage.
- C. Comply with pump manufacturer's written rigging instructions for handling.

1.6 COORDINATION

- A. Coordinate size and location of concrete [bases] [bases and pits] [pits]. Concrete, reinforcement, and formwork requirements are specified in Division 03.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 SUMP PUMPS

- A. Manufacturers:
 - 1. ABS Pumps, Inc.
 - 2. Aermotor Pumps, Inc.
 - 3. Barnes; Crane Pumps & Systems.
 - 4. Bell & Gossett Domestic Pump; ITT Industries.
 - 5. BJM Corporation.
 - 6. EBARA International Corporation; Standard Pump Division.
 - 7. Federal Pump Corp.
 - 8. Gorman-Rupp Company (The).
 - 9. Goulds Pumps; ITT Industries.
 - 10. Grundfos Pumps Corp.
 - 11. Liberty Pumps.
 - 12. Little Giant Pump Co.
 - 13. McDonald, A. Y. Mfg. Co.
 - 14. Metropolitan Industries, Inc.
 - 15. Myers, F. E.; Pentair Pump Group (The).
 - 16. Paco Pumps, Inc.
 - 17. Stancor, Inc.
 - 18. Sta-Rite Industries, Inc.
 - 19. Swaby Manufacturing Co.
 - 20. Weil Pump Company, Inc.
 - 21. Weinman Div.; Crane Pumps & Systems.

- 22. Zoeller Company.
- 23. Or other approved equals.

- B. Description: Factory-assembled and -tested, duplexsimplex, centrifugal, end-suction, submersible, direct-connected sump pumps complying with UL 778 and HI 1.1-1.2 and HI 1.3 for sump pumps.
- C. Casing: Cast iron; with cast-iron inlet strainer, legs that elevate pump to permit flow into impeller, and vertical discharge with companion flange for piping connection.
- D. Impeller: ASTM A 48/A 48M, Class No. 25 A or higher cast iron; statically and dynamically balanced, semiopen nonclog design, overhung, single suction, keyed and secured to shaft.
- E. Casing and Impeller: Cast-iron casing with metal inlet strainer and brass, bronze, or cast-iron impeller.
- F. Bearing: Renewable graphite sleeve bearings at pumps case and renewable graphite sleeve bearings at the intermediate bearing location.
- G. Pump Discharge Piping: Factory or field fabricated, ASTM A 53/A 53M, Schedule 40, galvanized-steel pipe with expansion joints at each end with top flanged discharge connection. .see section 221000
- H. Controls: Control shall be by a Type SBS Submers-a-bulb Controller, including four mercury bulbs on a Style 1 suspension bracket. A NEMA-4 junction box shall be provided plus a control panel in a NEMA-4 wall -mounting enclosure, including therein a fusible disconnect switch and a magnetic starter for each motor, HOA selector switches, automatic pump alternator, pump-run lights, and an alarm bell, silencer button and light to indicate high water condition. The control panel shall be of the solid-state type with encapsulated plug-in circuit board and plug-in relays.

2.3 HYDRAULIC ELEVATOR SUMP PUMP

A. Manufacturers:

- 1. ABS Pumps, Inc.
- 2. Aermotor Pumps, Inc.
- 3. Barnes; Crane Pumps & Systems.
- 4. Bell & Gossett Domestic Pump; ITT Industries.
- 5. BJM Corporation.
- 6. EBARA International Corporation; Standard Pump Division.
- 7. Federal Pump Corp.

8. Gorman-Rupp Company (The).
 9. Goulds Pumps; ITT Industries.
 10. Grundfos Pumps Corp.
 11. Liberty Pumps.
 12. Little Giant Pump Co.
 13. McDonald, A. Y. Mfg. Co.
 14. Metropolitan Industries, Inc.
 15. Myers, F. E.; Pentair Pump Group (The).
 16. Paco Pumps, Inc.
 17. Stancor, Inc.
 18. Sta-Rite Industries, Inc.
 19. Swaby Manufacturing Co.
 20. Weil Pump Company, Inc.
 21. Weinman Div.; Crane Pumps & Systems.
 22. Zoeller Company.
 23. Or other approved equals.
- B. Provide a submersible sump pump and controllers for same that preclude oil from oil laden waste water from discharging into the drainage system. The oil containment system, sump pump and other accessories, for controlling inadvertent oil discharge into the sewer lines shall function automatically and shall allow for water to be pumped from the elevator pit and to stop flowing upon detection of any trace of oil. The system shall include an alarm and LED lights that shall provide a warning in the event of: (a) the presence of oil in the pit and (b) high water level condition. In addition, LED lights shall indicate: (1) power to the motor and (2) pump run function. Provide alarms with separate and distinct sounds for: high water level situation, presence of oil in the pit, power on and pump run function. The warning signal shall be delivered to the Indicator Panel of the Auxiliary Signal System.
- C. The pump shall be approved to UL 778 standards and shall include thermal and overload protection. The motor shall be capable of operating continuously or intermittently. The motor housing shall be constructed of #304 stainless steel and mechanical seats shall be housed in a separate oil-filled compartment. The pump shall be placed in a concrete pit for which a frame and split cover shall be provided. The cover shall be of 5/16" steel checkered plate drilled for installation of the pump, oil-minder probe and float guide.
- D. Provide check valve and connect discharge piping to the building drainage system via an air gap or an air break.
- E. The main control shall be approved to UL 508 and housed in a gasketed NEMA 4X enclosure with a see-through window for observation of operating functions. The control panel shall come equipped with an 8-pin twist lock receptacle, dual solid state Oil-Minder relays with variable sensitivity settings, an over current relay, self-cleaning stainless steel sensor probe, high

decibel warning horn with alarm silencing switch, dual floats, clearly marked terminal board and remote monitoring contact. A NEMA 4X junction box with 8-pin twist-lock electrical receptacle and mating 8-conductor cable shall be provided. The 8-conductor cable shall be extended via a 2" electrical conduit for final connection to the twist lock outlet that is integral to the control panel. The control unit, junction box, pump, floats and sensor shall be factory assembled as a complete, ready-to-use system and shall be tested and approved as a complete system by a nationally recognized testing laboratory. The system shall allow for the main control to be located outside of the elevator hoistway to be monitored for all functions without having to enter the elevator shaft.

- F. Provide stainless steel screws for all anchoring and nailing of pit cover and angle frame

4.0 SUMP PUMP PITS

- . Description: Concrete pit with sump, pipe connections, curb frame, and separate cover.
- . Sump: Construct of watertight, cast-in-place, reinforced concrete with sidewall openings for pipe connections.
- 0. Pipe Connections: Sleeved openings large enough for mechanical sleeve seals for drainage piping.
- . Curb Frame and Cover:
 - 0. Curb Frame Material: Galvanized steel or steel with bituminous coating.
 - . Pattern Z-cross-section shape with raised outer rim of height matching cover, for recessed mounting having installed cover flush with top of floor slab.
- 0. Cover: Fabricate with openings having gaskets, seals, and bushings, for access to pumps, pump shafts, control rods, discharge piping, vent connections, and power cables.
 - . Material: Steel with bituminous coating.
 - . Reinforcement: Steel, capable of supporting foot traffic for pits installed in foot-traffic areas.

PART 14 - PART 3 - EXECUTION

14.13.1 EXAMINATION

- A. Examine roughing-in of plumbing piping to verify actual locations of storm drainage piping connections before sump pump installation.

14.2 CONCRETE

- . Install concrete bases of dimensions indicated for pumps and controllers. Refer to Division 22 Section "Common Work Results for Plumbing."
- 0. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around full perimeter of base.
- 0. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
- 0. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
- 0. Install anchor bolts to elevations required for proper attachment to supported equipment.
- . Cast-in-place concrete materials and placement requirements are specified in Division 03.

14.93.2 SUMP PUMP INSTALLATION

- A. Excavating, trenching, and backfilling.
- B.A. Install sump pumps according to applicable requirements in HI 1.4.
- C.B. Install pumps and arrange to provide access for maintenance including removal of motors, impellers, couplings, and accessories.
- D.C. Set submersible sump pumps in pit or floor. Make direct connections to existing drainage piping.
- E. Install sump pump basins and connect to drainage piping. Brace interior of basins according to manufacturer's written instructions to prevent distortion or collapse during concrete placement. Set basin cover and fasten to basin top flange. Install cover so top surface is flush with finished floor.

F. Construct sump pump pits and connect to drainage piping. Set pit curb frame recessed in and anchored to concrete. Fasten pit cover to pit curb flange. Install cover so top surface is flush with finished floor.

G.D. Support piping so weight of piping is not supported by pumps.

14.103.3 CONNECTIONS

A. Install piping adjacent to sump pumps to allow service and maintenance.

B. Connect storm drainage piping to pumps. Install discharge piping equal to or greater than size of pump discharge piping.

B.C. ALL CONNECITON TO EXISTING SANITARY OR STORM SYSTEM FROM SUMP PUMP SHALL BE INDIRECT CONNECTION. Refer to Division 22 Section "Facility Storm Drainage Piping."

1. Install flexible connectors adjacent to pumps in discharge piping.

2. Install check and shutoff valves on discharge piping from each pump. Install unions on pumps having threaded pipe connections. Install valves same size as connected piping.

C.D. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

D.E. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

14.113.4 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.

2. Verify bearing lubrication.

3. Disconnect couplings and check motors for proper direction of rotation.

4. Verify that each pump is free to rotate by hand. If pump is bound or drags, do not operate until cause of trouble is determined and corrected.

5. Verify that pump controls are correct for required application.

B. Start pumps without exceeding safe motor power:

1. Start motors.
 2. Open discharge valves slowly.
 3. Check general mechanical operation of pumps and motors.
- C. Test and adjust controls and safeties.
- D. Remove and replace damaged and malfunctioning components.
1. Pump Controls: Set pump controls for automatic start, stop, and alarm operation as required for system application.
 2. Set field-adjustable switches and circuit-breaker trip ranges as indicated, or if not indicated, for normal operation.
- E. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project outside normal occupancy hours for this purpose.

14.123.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain control of pumps. Refer to Division 01 Section "Demonstration and Training."

END OF SECTION 221429

SECTION 230500 - BASIC MECHANICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.01 PROVISIONS INCLUDED

- A. Include General Conditions, Supplementary General Conditions Division 0 and applicable parts of Division 01 for conditions and Division 23 Commissioning and requirements which may affect the work of this Section.
- B. Examine all other Sections of the specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other Trades affecting, or affected by work of this Section. Cooperate with such Trades to ensure the steady progress of all work under the Contract.

1.02 DEFINITIONS

- A. Words in the singular shall also mean and include the plural, wherever the context so indicates and words in the plural shall mean the singular, wherever the context so indicates.
- B. Wherever the terms "shown on drawings" are used in the specifications, they shall mean "noted", "indicated", "scheduled", "detailed", or any other diagrammatic or written reference made on the drawings.
- C. Wherever the term "provide" is used in the specifications it will mean "furnish" and "install", "connect", "apply", "erect", "construct", or similar terms, unless otherwise indicated in the specifications.
- D. Wherever the term "material" is used in the specifications it will mean any product, "equipment", "device", "assembly", or "item" required under the Contract, as indicated by trade or brand name, manufacturer's name, standard specification reference or other description.
- E. The terms "approved", or "approval" shall mean the written approval of the Engineer.
- F. The term "specification" shall mean all information contained in the bound or unbound volume, including all

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"Contract Documents" defined therein, except for the drawings.

- G. The terms "directed", "required", "permitted", "ordered", "designated", "prescribed" and similar words shall mean the direction, requirement, permission, order, designation or prescription of the Engineer. The terms "approved", "acceptable", "satisfactory" and similar words shall mean approved by, acceptable or satisfactory to the Engineer. The terms "necessary", "reasonable", "proper", "correct" and similar words shall mean necessary, reasonable, proper or correct in the judgment of the Engineer.
- H. "Piping" includes in addition to pipe or mains, all fittings, flanges, unions, valves, strainers, drains, hangers and other accessories relative to such piping.
- I. "Concealed" means hidden from sight in chases, furred spaces, shafts, hung ceilings, embedded in construction or in crawl spaces.
- J. "Exposed" means not installed underground or "concealed" as defined above.
- K. "Invert Elevation" means the elevation of the inside bottom of the pipe.
- L. ~~When the Contract Documents specify that the Engineer shall be the Architect of Record for the project and/or Owner.~~ Project and "Engineer" shall refer to the Engineer of Record for the project and/or Owner.
- M.L. "Architect" shall refer to the Architect of Record for the Project and "Engineer" shall refer to the Engineer of Record for the project and/or Owner.
- N.M. "Owner" shall refer to the designated representatives of the Project Owner.
- O.N. " Contractor" shall refer to the Contractor(s) performing work under other sections of the Contract Specifications.
- P.O. "Construction Manager" shall refer to the Construction Manager (CM) for this project.
- Q.P. "Commissioning Agent (CA)" shall refer to the party employed by the Owner to witness the demonstration of all systems according to the commissioning plan. Refer to Division 23.

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1.03 CODES, STANDARDS AND REFERENCES

- A. All materials and workmanship shall comply with all applicable Codes, Specifications, Local and State Ordinances, Industry Standards and Utility Company Regulations, latest editions.
- B. In case of difference between Building Codes, State Laws, Local Ordinances, Industry Standards and Utility Company Regulations and the Contract Documents, the Mechanical Contractor, as applicable, shall promptly notify the Engineer in writing of any such difference.
- C. In case of conflict between the Contract Documents and the requirements of any Code or Authorities having jurisdiction, the most stringent requirements of the aforementioned shall govern for budgetary purposes. However, no work will proceed until the Engineer determines the correct method of installation.
- D. Should any Contractor, as applicable, perform any work that does not comply with the requirements of the applicable Building Codes, State Laws, Local Ordinances, Industry Standards and Utility Company Regulations, he shall bear all costs arising in correcting the deficiencies, as approved by the Engineer.
- E. Applicable Codes and Standards shall include all State Laws, Local Ordinances, Utility Company Regulations and the applicable requirements of the following accepted Codes and Standards, without limiting the number, as follows:
 - 1. National Electrical Code (NEC)
 - 2. Environmental Protection Agency (EPA)
 - 3. New York State -- Environmental-- Environmental Air Quality Protection Agency
 - 4. 20185 International Building Code with 2017 Supplement
 - 5. 20185 International Mechanical Code
 - 6. 20185 International Fire Code
 - 7. 2020 NYS Building Code
 - 8. 2020 NYS Mechanical Code

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9. 2020 NYS Fire Code
- 6.10. NYS Stretch Code
0. Recommendations of the National Fire Protection Association (NFPA), latest applicable edition adopted, in general and in particular:
 - . Life Safety, NFPA 101
 - . HVAC, NFPA 90A, 90B
0. Recommendations of ASHRAE (American Society of Heating, Refrigeration and Air Conditioning Engineers), including but not limited to:
 - . ASHRAE -2013 ASHRAE Fundamentals Handbook
 - . ASHRAE 62.1-2013 Ventilation for Acceptable Indoor Air Quality
 - . ASHRAE 15-2013 Safety Standard for Refrigeration Systems

M.F. In these specifications, references made to the following Industry Standards and Code Bodies are intended to indicate the accepted volume or publication of the Standard. All equipment, materials and details of installation shall comply with the requirements and latest revisions of the following Bodies, as applicable:

1. AMCA Air Moving and Conditioning Association
2. ANSI American National Standards Institute
3. ARI American Refrigeration Institute
4. ASHRAE American Society of Heating, Refrigeration and Air Conditioning Engineers
5. ASME American Society of Mechanical Engineers
6. ASTM American Society of Testing Materials
7. AWS American Welding Society
8. CS Commercial Standards, U.S. Department of Commerce

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- 9. FM Factory Mutual
- 10. FS Federal Specification, U.S. Government
- 11. MSS Manufacturers Standardization Society of the Valve and Fittings Industry
- 12. NEMA National Electrical Manufacturers Association
- 13. SMACNA Sheet Metal and Air Conditioning Contractor's National Association
- 14. UL Underwriters' Laboratories, Inc.

N.G. Contractor for the work under his charge, shall give all necessary notices, obtain and pay for all permits, pay all governmental taxes, fees and other costs in connection with his work; file for necessary approvals with the jurisdiction under which the work is to be performed. Contractor shall obtain all required Certificates of Inspection for his work and deliver same to the Engineer before request for acceptance of his portion of work and before final payment is made.

O.H. All equipment shall be installed per manufacturer's recommendations and requirements. The Contractor shall notify the engineer in writing when they intend to deviate from manufacturer's installation guidelines. The engineer shall advise if the installation is acceptable prior to installation.

1.04 SUBMITTALS

- A. Submit detailed shop drawings or brochures for approval of equipment and material proposed to be used on this project. Furnish the number of copies required by General Conditions.
- B. Documents submitted shall show the following:
 - 1. Principal dimensions and details of construction.
 - 2. Operating and maintenance clearances.
 - 3. Weights of principal parts and total weights with information required for the design of supports and foundations.

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4. Sizes and location of piping and connections.
 5. Approval stamp of Underwriters' and other authorities having jurisdiction of Contract Drawings requiring such approval.
 6. Certified performance guarantees.
 7. Calculations and details for refrigeration for field assembled systems including description of specialties and pressure drops, layout of piping with lengths fittings, and refrigerant specialties, and capacity curves for evaporator and compressor showing balance points.
 8. Minimum scale for sheet metal plans and piping plans shall be $\frac{1}{4}$ inch equal 1 foot.
- C. Submit brochures that contain only that information which is relative to the particular equipment or materials to be furnished. Do not submit catalogs that describe several different items other than those items to be used unless irrelevant information is marked out and relevant material is clearly marked.
- D. Specifications Compliance Statement
1. The manufacturer shall submit a point by pointpoint-by-point statement of compliance with the specifications.
 2. The statement of compliance shall consist of a list of all paragraphs (line by line).
 3. Where the proposed system complies fully, such shall be indicated by placing the word "comply: opposite the paragraph number.
 4. Where the proposed system does not comply, or accomplishes the stated function in a manner different from that described, a full description of the deviation shall be provided.
 5. Where a full description of a deviation is not provided, it shall be assumed that the proposed system does not comply with the paragraph in question.

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6. Submissions which do not include a point by point statement of compliance as specified shall be disqualified.

1.05 GUARANTEE

- A. Attention is directed to provisions of the General Conditions and Supplementary General Conditions regarding guarantees and warranties for work under this Contract.
- B. Manufacturers shall provide their standard guarantees for work under this Contract, unless specified otherwise. However, such guarantees shall be in addition to and not in lieu of all other liabilities which the manufacturer and Contractor for Contractor managed for managed contracts may have by Law or by other provisions of the Contract Documents. In any case, such guarantees and warranties shall commence when the Owner accepts the various systems, as applicable and as determined by the Engineer. The guarantees and warranties will remain in effect for a minimum period of (1) year thereafter except where longer periods are specifically stated and specified.
- C. All materials, items of equipment and workmanship furnished under HVAC, shall carry the warranty against all defects in material and workmanship. Any fault due to defective or improper material, equipment, workmanship or design which may develop shall be made good, forthwith, by and at the expense of the Contractor responsible, including all other damage done to areas, materials and other systems resulting from this failure.
- D. Contractor shall guarantee that all elements of the systems provided under his Contract, are of sufficient capacity to meet the specified performance requirements as set forth herein or as indicated on the drawings.
- E. Upon receipt of notice from the Owner of failure of any part of the systems or equipment during the guarantee period, the affected part or parts shall be replaced by the responsible Contractor.
- F. Contractor shall furnish, before the final payment is made, a written guarantee covering the above requirements.

1.06 COMMISSIONING

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- A. The Testing, Adjusting and Balancing (TBAB) Contractor must also include sufficient man-hours within their bids, for their participation with the Commissioning Team and the rebalancing/readjusting/resetting all device setpoints, as required. For additional work, refer to Section 230593 and 230800.

1.07 THE CONTRACTOR

- A. Contractor shall base his bid on site examinations performed by him. This requirement is mandatory. Contractor is recommended shall to visit the proposed site where work is scheduled to be performed and ascertain for himself the amount of work required to fulfill the intent of his Contract and the complexity of the installation. Contractor shall not hold the Engineer, his Consultants, agents or employees responsible for or bound by, any schedule, estimate or for any plan thereof. Contractor shall study all Contract Documents (HVAC, Plumbing, Fire Protection, Electrical, Communications, Architectural, Structural), etc., to determine exactly the extent of work to be provided under each Section, and in installing new equipment and systems and coordinating the work with the other Trades and existing conditions.
- B. Contractor shall faithfully execute his work according to the terms and conditions of the Contract and specifications and shall take all responsibility for and bear all losses resulting to him in the execution of his work.
- C. Contractor shall be responsible for the location and performance of work provided under his Contract as indicated on the Contract Documents. All parties employed directly or indirectly by Contractor shall perform their work according to all the conditions as set forth in these specifications.
- D. Contractor shall furnish all materials and perform all work in accordance with the project specifications and any supplementary documents provided by the Engineer. The work shall include every item shown on the drawings and/or required by the specifications as interpreted by the Engineer. All work and materials furnished and installed shall be new and of the best quality and workmanship. Contractor shall cooperate with the Engineer so that no error or discrepancy in the Contract Documents shall cause defective materials to be used or poor workmanship to be performed.

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1.08 COORDINATION OF WORK

- A. Contractor shall compare his drawings and specifications with those of other Trades and report any discrepancies between them to the Engineer and obtain from the Engineer written instructions for changes necessary in the mechanical or electrical work, to ensure that all work is installed in coordination and cooperation with other Trades installing interrelated work. Before installation, Contractor shall make proper provisions to avoid interferences in a manner approved by the Engineer. All changes required in the work of Contractor caused by his negligence, shall be corrected by him at his own expense, to the Engineer's satisfaction.
- B. Locations of piping, ductwork, conduits and equipment shall be adjusted to accommodate the new work with interferences anticipated and encountered during installation. Contractor shall determine the exact routing and location of his systems prior to fabrication or installation of any system component. Accurate measurements and coordination drawings will have to be completed to verify dimensions and characteristics of the various systems' installations.
- C. Lines which pitch shall have the right-of-way over those which do not pitch. For example, waste piping shall normally have the right-of-way. Lines whose elevations cannot be changed shall have the right-of-way over lines whose elevations can be changed.
- D. Offsets, transitions and changes of direction in all systems shall be made as required to maintain proper headroom and pitch of sloping lines whether or not indicated on the drawings. Contractor shall provide manual air vents and drains as required for his work to effect these offsets, transitions and changes in direction, as applicable.
- E. All work shall be installed in a way to permit removal (without damage to other parts) of coils, filters, control appurtenances, fan shafts and wheels, filters, belt guards, sheaves and drives and all other system components provided under this Contract requiring periodic replacement or maintenance. All piping shall be arranged in a manner to clear the openings of swinging overhead access doors, ceiling tiles and cleaning access doors in ductwork.
 - 1. Access to any and all components requiring servicing, adjustment, calibration, maintenance or periodic

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replacement shall be provided so that the Owner's operations personnel can freely gain access without removal of any materials other than the access panel or ceiling tile. Access shall be understood to mean free, clear and unobstructed from the floor up to the device and/or component being serviced. Access panels for VAV/CV boxes shall be 24" x 24" minimum.

0. Fire rated access doors with closers shall be provided for all rated assemblies.

G.F. The Contract Drawings are diagrammatic only intending to show general runs and locations of piping, ductwork, equipment, terminals and specialties and not necessarily showing all required offsets, details and accessories and equipment to be connected. All work shall be accurately laid out with other Trades to avoid conflicts and to obtain a neat and workmanlike installation which will afford maximum accessibility for operation, maintenance and headroom.

H.G. Where discrepancies in scope of work as to what Trade provides items, such as starters, disconnects, flow switches, electric control components, etc., exist, such conflicts shall be reported to the Engineer prior to signing of the Contract. If such action is not taken, Contractor, as applicable, shall furnish such items as part of his work, for complete and operable systems and equipment, as determined by the Engineer.

I.H. Where drawing details, plans and/or specification requirements are in conflict and where pipe or duct sizes of same pipe or duct run are shown to be different between plans and/or between plans and sections or details, the most stringent requirement will be included in the Contract. HVAC systems and equipment called for in the specification and/or shown on the drawings shall be provided under this Contract as if it were required by both the drawings and specifications. However, prior to ordering or installation of any portion of work which appears to be in conflict, such work shall be brought to Engineer's attention for direction as to what is to be provided.

J.I. Final location of all air distribution devices, thermostats, heaters, control devices, sprinkler heads, etc., shall be coordinated with the Architectural reflected ceiling plans and/or other Architectural details, as applicable. (**Note:** Sprinkler head locations shall provide the specified coverage rating and water flow density, and

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shall be in accordance with all applicable Codes and in full compliance with the requirements of the Owner's insurance carrier.) Offsets of ductwork, added sheet metal, fittings, elbows, flexible connections, etc., shall be provided as required to comply with the Architectural reflected ceiling plans and/or installation details. Obtain approval of locations of all devices from Engineer in the field, prior to installation.

1.09 COORDINATION DRAWINGS

- A. Before materials are purchased, fabricated or work is begun, Contractor shall prepare coordination drawings for all floors/areas, including buried systems/services (all-Trade-composite at ¼" scale), showing the size and location of his equipment and lines, in the manner described herein under General Requirements.
- B. Coordination drawings are for the Contractor and Engineer's use during construction and shall not be construed as shop drawings or as replacing any shop drawings. The coordination drawings, when corrected for actual "as-built" conditions, will be reviewed by the Engineer, corrected and become the Record Drawings to be submitted to the Owner for his use.
- C. The cost of producing and reproducing the drawings will be included under the Contract, including the cost or preparation of the Architectural building outlines. The Contractor shall take the lead to show all ductwork, piping, etc., and circulate the drawings to any of his Subcontractors and the other Trades (Plumbing, Fire Protection, Electrical), so that they can indicate all their work as directed by the Contractor and Contractor and Engineer as required, to result in a fully coordinated installation.
- D. In addition to the regular coordination drawing review, the mechanical work will also be reviewed by the Engineer to ensure that the system and equipment arrangements are suitable to provide maintenance access and service as follows:
 - 1. Valves and instrumentation should be grouped where possible and positioned in accessible locations.
 - 0. Valves on pipes of 6" and larger, positioned above 7'-0" in height from the operating level, will be provided with chain operated valve wheels and be

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located where chains will not interfere with primary access through the mechanical room.

0. Location of control/diagnostic panels shall be shown and identified on the mechanical room coordination drawings.
- G.E. Prepare a complete set of computer based AutoCad (Latest Version) drawings at scale not less than $\frac{1}{4}$ " scale equals 1'-0", showing basic layout for the structure and other information as needed for preparation of Coordination Drawings. The drawings shall indicate the layout of all specialty tradework as indicated herein and shall be designated as Coordination Drawings. The Contractor shall provide a minimum of two (2) weeks notice to the engineer for preparation of the disk. A signed liability release form will be required from the Contractor prior to the release of the disk from the engineer.
- H.F. Highlight all fire rated partitions on the Coordination Drawings for appropriate coordination.
- I.G. The main paths for the installation or removal of equipment from mechanical and electrical rooms shall be clearly indicated on the Coordination Drawings.
- J.H. Each of the specialty trades shall add its work to the base drawings with appropriate elevations and grid dimensions. Specialty trade information shall be required for fan rooms and mechanical rooms, horizontal exits from duct shafts, crossovers and for spaces in the above ceilings where congestion of work may occur such as corridors and, where required, entire floors. Drawings shall indicate horizontal and vertical dimensions to avoid interference with structural framing, ceilings, partitions and other services. Indicate elevations relative to finish floor for bottom of ductwork and piping and conduit 6" greater in diameter.
1. Specialty Trade shall include:
 - a. Plumbing system.
 - b. HVAC piping and associated control systems.
 - c. Electrical.
 - d. Sheet Metal Work.

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- e. Fire Protection system.
 - f. Automatic Temperature Control
 - g. Fire Alarm
 - . Security
 - . Telecommunications
 - . Commissioning
- N.I. Upon completing their portion of the Coordination Drawings, each specialty trade shall sign, date and return Coordination Drawings to the Contractor.
- O.J. Where conflicts occur with placement of materials of various trades, the Contractor shall be responsible to coordinate the available space to accommodate all trades. Any resulting adjustments shall be initialed and dated by the affected specialty trade Subcontractor and. The ContractorThe Contractor shall then include final date and sign each drawing.
- P.K. Fabrication shall not start until Coordinate Drawings have been distributed to all parties as indicated herein.
- Q.L. Format: Coordination Drawings (plans only) shall be done using CAD in AutoCAD (Latest Version), in either IBM or Mac Format. Disks shall be given to the Engineer for future transfer to Owner. Coordination Drawings will be used as base for as-built drawings.
- R.M. Distribution of Coordination Drawings:
- 1. The Contractor shall provide one print of each Coordination Drawing to:
 - a. Each specialty trade Subcontractor.
 - b.a. Owner.
 - c.b. Contractor.
 - d.c. Engineer (for record purposes).
- S.N. After distribution:

1. Resolve all interference'sinterferences not previously identified.

T.O. Coordination Drawings include but are not necessarily limited to:

1. Structure.
2. Partition/room layout, including indication of smoke and fire resistance rated partitions.
3. Ceiling layout and heights.
4. Light fixtures.
5. Access panels.
6. Sheet metal, heating coils, heat pumps, grilles, diffusers, etc.
7. All heating piping and valves.
8. Smoke and fire dampers.
- 9.7. Soil, waste and vent piping.
10. Major water and gases.
- 11.8. Major electrical conduit runs, panel boards, feeder conduit and racks of branch conduit. Motor control centers, starters and disconnects.
- 12.9. Sprinkler piping and heads.
- 13.10. All equipment, including items in the Contract as well as O.F.C.I. and O.F.I. items.
- 14.11. Equipment located above finished ceiling requiring access for maintenance and service. In locations where acoustical lay-in ceilings occur indicate areas in which the required access area may be greater than the suspected grid systems.
15. Rainwater Piping.
- 16.12. Existing conditions, including, but not limited to, Mechanical, Plumbing, Fire Protection and Electrical items.

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- U.P. The Engineer's response to all requests for information (RFI's) generated by the trade contractors shall be distributed to all other affected trades as if this information was contained in the original contract documents. In other words, the party that issues an RFI is responsible for distributing the information to all affected parties.

1.10 RECORD DRAWINGS

- A. Contractor shall maintain, current at the site, a set of Contract Drawings for his portion of the work on which he shall accurately show the actual installation of all work provided under his Contract indicating any variation from the Contract Drawings, in accordance with the General Conditions and Supplementary General Conditions. Changes whether resulting from formal change orders, requests for information, or other instructions issued by the Engineer shall be recorded. Include changes in sizes, location and dimensions of piping, ducts, equipment, etc.
- B. Contractor shall indicate progress by coloring-in various pipes, ducts and associated appurtenances exactly as they are erected. This process shall incorporate both the changes noted above and all other deviations from the original drawings whether resulting from job conditions encountered or from any other causes.
- C. The marked-up and colored-up prints will be used as a guide for determining the progress of the work installed. They shall be inspected periodically by the Engineer and Owner's representatives and they shall be corrected if found either inaccurate or incomplete. This procedure is mandatory. Marked up drawings shall include all flow diagrams, schedules, details and control diagrams.
- D. Contractor shall meet at a minimum on a monthly basis, with the Owner's representative to transfer the information from his HVAC, Plumbing, Fire Protection, etc., marked-up and colored-up prints to a set which will become the basis for preparation of as-built drawings.
- E. Upon completion of the project, Contractor shall submit his marked-up drawings to the Engineer for review and comment. After the Engineer reviews and comments on this set of documents, Contractor shall prepare as-built drawings on CAD using AutoCAD (Latest Version). When the work is completed, Contractor shall provide 2 hard copies to the Engineer for submittal to the Owner and disks with all

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documentation and a set of reproducible drawing plots marked "As-Built" drawings. The Contractor shall bear all costs of producing the CAD "As-Built" drawings, providing all necessary drawing changes and printing the reproducible drawings for the work under his charge.

1.11 GIVING INFORMATION

- A. Contractor shall keep himself fully informed as to the shape, size and position of all openings required for his apparatus and shall give information to the Engineer and or Subcontractors sufficiently in advance of the work so that all openings may be built in advance.
- B. The manufacturers listed within this specification have been preselected for use on this project. No submittal will be accepted from a manufacturer other than those specified. Should any Contractor wish to propose a substitution during the bid period, such request shall be made in writing to the Engineer, at least (15) working days, prior to bid date. If substitutions are deemed acceptable, such items shall be issued as an Addendum, prior to bid due date. The above requirement is mandatory.

1.12 EQUIPMENT AND MATERIALS

- A. Equipment and materials shall be delivered to the site and stored in original sealed containers, suitably sheltered from the elements, but readily accessible for inspection by the Engineer until installed. All items subject to moisture damage such as controls, filters, etc., shall be stored in dry, heated spaces.
- B. Contractor shall have his equipment tightly covered and protected against dirt, water and chemical or mechanical injury and theft. At the completion of the work, equipment and materials shall be cleaned, polished thoroughly and turned over the Owner in a condition satisfactory to the Engineer. Damage or defects developing before acceptance of the work shall be made good at each Subcontractor's expense as applicable.
- C. Contractor shall make necessary field measurements to ascertain space requirements, for equipment and connections to be provided under his Trade and shall furnish and install such sizes and shapes of equipment to allow for the final installation to conform to the drawings and specifications.

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- D. Manufacturers' directions shall be followed completely in the delivery, storage, protection and installation of any equipment. Promptly notify the Engineer in writing of any conflict between any requirements of the Contract Documents and the manufacturer's directions and obtain the Engineer's written instructions before proceeding with the work. Should Contractor perform any work that does not comply with the manufacturer's directions or written instructions from the Engineer, he shall bear all costs arising in correcting any deficiencies that should arise.
- E. Contractor shall furnish and install all equipment, accessories, connections and incidental items necessary to fully complete the work under his Contract for use, occupancy and operation by the Owner.
- F. Where equipment of the acceptable manufacturers requires different arrangement or connections from those shown, it shall be the responsibility of Contractor to install the equipment to operate properly and in harmony with the original intent of the drawings and specifications. When directed by the Engineer, Contractor shall submit drawings showing the proposed installation. If the proposed installation is approved, Contractor shall make all necessary changes in all effected related work provided under other Sections including location of roughing-in connections by other Trades, electrical requirements, piping, supports, insulation, etc. All changes shall be made at no increase in the Contract amount or additional cost to the other Trades to and/or Owner.
- G. All equipment and materials required for installation under these specifications shall be new and without blemish or defect. Equipment and materials shall be products which will meet with the acceptance of the Authorities having jurisdiction over the work and as specified hereinbefore. Where such acceptance is contingent upon having the products listed or labeled by FM, UL or other testing laboratories, the products shall be so listed or labeled. Where no specific indication as to the type or quality of material or equipment is indicated, a first class standard article shall be provided.
- H. All equipment of one type (such as valves, fans, split system air conditioner air handling units [packaged or custom built], air terminals, heat pumps, plumbing fixtures,, etc.), shall be the product of one manufacturer.

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- I. Equipment repurchased on behalf of the Owner or by the Owner himself, if assigned to Contractor, shall be received, inspected, installed, etc., as if it was purchased by the Contractor as applicable. All guarantees, service contracts, etc., shall be the same as for all other equipment provided under this Contract.

1.13 CUTTING AND PATCHING

- A. Contractor shall be responsible for all core drilling, as required for work under his Contract, but in no case shall he cut into any structural elements without the written approval of the Engineer.
- B. All cutting, rough patching and finish patching, shall be provided under this Contract.
- C. All concrete and masonry equipment bases, shall be provided under this Contract.

1.14 USE OF PREMISES

- A. Contractor shall confine all of his apparatus, storage of materials and construction to the limits indicated on the drawings and directed by the Engineer and he shall not encumber the premises with his materials.
- B. In storing materials within areas (structure or ground), or when used as a shop, Contractor shall restrict his storage to space designated for such purposes. Contractor will be held responsible for repairs, patching or cleaning arising from any unauthorized use of premises.
- C. Notwithstanding any approvals or instructions which must be obtained by Contractor from the Engineer in connection with use of premises, the responsibility for the safe working conditions at the site shall remain Contractor's. The Engineer or Owner shall not be deemed to have any responsibility or liability in connection therewith.
- D. Air handling unit or cooling tower sections shall not be used for storage of materials. The Contractor will be responsible for securing, and maintaining the equipment clean. The above requirement is mandatory.

1.15 PROTECTION/CLEANLINESS

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- A. All materials such as valves, fittings, piping, ductwork, plenums, grilles, registers, diffusers, etc., shall be properly protected from the accumulation of dirt, dust, debris or any other contaminants. All ductwork and piping openings shall be temporarily closed by Contractor or Subcontractor installing same, so to prevent obstruction and damage, as a minimum at the end of each working day or more often if required by job conditions. Contractor shall take precautions to protect his materials from damage and theft.
- B. Contractor shall furnish, place and maintain proper safety guards for the prevention of accidents that might be caused by the workmanship, materials, equipment or electrical systems provided under his Contract.

1.16 DAMAGE CORRECTION AND EXTRA WORK

- A. Contractor shall be held responsible and shall pay for all damages caused by his work to the new and existing building structures and new and existing equipment, piping, duct systems, etc., and all work and finishes installed under this Contract in the new or in existing building. Repair of such damage shall be done as herein before specified, at the expense of Contractor and to the Engineer's satisfaction.
- B. Contractor shall promptly correct all work provided under his Contract and rejected by the Engineer as defective or as failing to conform to the Contract Documents whether observed before or after completion of work and whether or not fabricated, installed or completed. Contractor shall bear all costs of correcting such rejected work.
- C. No claim for extra work will be allowed unless it is authorized by the Engineer in writing before commencement of the extra said work.

1.17 TOUCH-UP PAINTING

- A. Contractor shall thoroughly clean all equipment and systems provided under this Contract from rust, splatters and other foreign matter or discoloration, leaving every part of each system in an acceptable prime condition. Contractor, for the work under his Contract, shall refinish and restore to the original condition all equipment and piping which has sustained damage to the manufacturer's prime and finish coats of paint and/or enamel.

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1.18 DUCT AND PIPE SLEEVES, PLATES AND ESCUTCHEONS, FIRESTOPPING AND SMOKEPROOFING

- A. Where piping and/or ductwork pass through masonry or concrete walls or drywall partitions or floors, Contractor shall provide and set individual sleeves for each pipe or duct and all other work under his charge, as necessary for passage of all pipes and/or ducts. Sleeves shall be of sufficient size to provide 1/2" air space around the pipe or duct passing through (including insulation where pipes or ducts are internally/externally insulated). All openings shall be sealed, smoke proofed and made tight. Contractor shall be responsible for the exact location of sleeves provided under his Contract and shall coordinate all requirements for piping and ductwork sleeves.
- B. Contractor, for work under his charge, shall determine the required inside diameter of each individual wall opening or sleeve before ordering, fabrication or installation.
- C. Sleeves and inserts shall not be used in any portions of the building, where their use would impair the strength or construction features of the building. Elimination of sleeves must be approved by the Engineer.
- D. Provide chrome plated brass escutcheons with set screw for exposed piping, in all areas except in mechanical rooms. In this area use plain brass or cast iron/cast-iron escutcheons suitable for painting. All escutcheons shall be sized to fit the bare pipe or insulation in a snug and neat manner. They shall be of sufficient size to cover sleeved openings for the pipes and of sufficient depth to cover sleeves projecting above floors. Escutcheons shall be as manufactured by Beaton & Caldwell, Dearborn Brass, or Grinnell.
- . Pipe or duct sleeves shall be made of Schedule 40 pipe, 20 gauge galvanized steel or 16 gauge steel as follows:
 - 0. Sleeves on pipes passing through masonry or concrete construction shall be Schedule 40 pipe.
 - 0. Sleeves on ducts passing through concrete construction shall be 20 gauge steel unless required otherwise by item 4. Below.
 - 0. Sleeves on pipes or ducts passing through fire rated partitions shall be 16 gauge steel.

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0. Sleeves on pipes or ducts passing through non-rated drywall construction shall be 20 gauge galvanized steel.

. Pipe or duct sleeves shall be set as follows:

0. Set sleeves 1" above finish floor, (except set sleeves, 6" above finish floor at penthouses or mechanical rooms and 6" above finished roof) and flush on each side of walls. Coordinate roof penetrations with roof Subcontractor.
0. Sleeves shall be set securely in place before concrete is poured when placed in concrete construction.
0. Provide sheet metal sleeves for all duct penetrations and cover with sheet metal plates all penetrations after ductwork has been installed through walls/floors.

. Contractor shall fire stop, smoke stop, and/or acoustically seal the space between the sleeves provided under his Contract and piping or ductwork as applicable, as follows:

0. See specification Section 230584 Through Penetration Fire stopping System

1.301.19 MISCELLANEOUS IRON AND STEEL

- A. Each trade shall provide all primary and secondary steel supports and hangers as shown on the drawings and/or as required to support equipment, ductwork, piping, exhaust fans, or any other materials provided under the work of this Section.
- B. The work of this Section of designing, furnishing and installing all miscellaneous metal work associated with the system, and related items as indicated on the drawings and/or as specified herein, and includes, but is not limited to the items listed herein below.
- C. The scope of work shall include:
 1. Exhaust fan support platforms including ship ladders, steel grating for decking, cross-bracing and floor stands.

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- 2.1. Intermediate beams to hang ductwork and piping from the roof. All piping and ductwork must be hung from beam or supported from the floor. Provide supplemental steel for support of equipment.
 - 3.2. Support of ductwork and piping in shafts in addition to support provided by structure.
 - 4.3. Support of ductwork via floor stands as required.
 5. Heat exchanger support racks.
 6. Piping support in underground concrete trench and manholes.
 7. Pipe anchors in the building.
 - 8.4. Hangers, brackets, angel irons or rods required for the support and protection of HVAC, plumbing and fire protection equipment.
 - 9.5. Field prime painting of galvanized steel and field finish painting.
- D. Shop Drawings for General Miscellaneous Items
1. Submit Shop Drawings of all miscellaneous metal items to Engineer for approval, showing sizes and thickness of all members, types of materials, methods of connection and assembly, complete dimensions, clearances, anchorage, relationship to surrounding work by other Trades, shop paint, and other pertinent details of fabrication and installation.
- E. The SubcContractor shall engage the services of a Professional Engineer registered within the state wherein the project is located to prepare complete Design Drawings and structural design computations based on, and closely following, the design and details on the Drawings. The Design Drawings and structural design computations, with the Engineer's seal affixed thereto, shall be submitted to the Engineer for review. The structural design computations shall provide a complete structural analysis, including anchors and fastening devices, and shall certify as to conformation to governing laws and codes. These submittals, upon review, must be sufficient, when taken in conjunction with this Specification to provide the complete basis of

the fabrication and erection. All delegated design must be approved by SUCF. See directive 1C-13.

F. Samples

1. Submit duplicate samples of all materials to be furnished under this Section if, and in size and form, requested by Engineer.

G. Do not order materials or begin fabrication until Engineer's approval of submittals has been obtained.

H. In addition to the governing laws and codes, the following Specifications and Codes form a part of this Specification:

1. American Iron and Steel Institute applicable standards.
2. American Institute of Steel Construction "Code of Standard Practice for Steel Buildings and Bridges" and "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings".
3. American Welding Society Code: Standard Code for Arc and Gas Welding in Building Construction.

I. All materials shall be new stock, free from defects impairing strength, durability or appearance and of best commercial quality for each intended purpose.

1. Unless other wise specifically called for, work of this Section shall be fabricated of structural steel conforming to ASTM Specification A36.
2. Steel pipe shall be seamless steel pipe conforming to ASTM Specification A53, Schedule 40.
3. Steel tubing shall be seamless steel tubing conforming to ASTM Specifications A500 to A501.
4. Construction specialties such as slotted inserts, wedge inserts, etc., shall be as manufactured by Hohmann and Barnard, Gateway Erectors, Inc., Richmond Screw Anchor Co. or equal approved by Engineer.
5. Non-ferrous metals shall be as specified under descriptions of specific items, herein below.

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- J. Provide all anchors, bolts, sockets, sleeves, and other parts required for securing each item of work of this Section to the construction, including furnishing to concrete workers all required insets and sleeves for use at concrete.
1. All exposed fastenings shall be of the same material and finish as the metal to which applied, unless otherwise noted.
 2. Welding rods shall conform to AWS Standards and the recommendation of the welding rod manufacturer.
 3. Shop primer for other ferrous surfaces shall be a high-quality, lead-free, rust-inhibitive primer, Tnemec No. 10-99 Metal Primer or equivalent by Devoe and Reynolds Co., Caroline or approved equal.
- K. Metal surfaces shall be clean and free from mill scale, flake, rust and rust pitting. metal work shall be well formed and finished to required shape and size, true to details, with straight, sharp lines and angles and smooth surfaces. Curved work shall be true radii. Exposed sheared edges shall be eased.
- L. Weld all permanent connections. Welds shall be continuous on all exposed surfaces and where required for strength on concealed surfaces. Exposed welds shall be ground flush and smooth, with voids filled with metallic filling compound (metallic filling compound not permitted on surfaces to receive hot-dip galvanizing). Tack-welding will not be permitted unless specifically called for. Do not use screws or bolts where they can be avoided. Where used, heads shall be countersunk, screwed up tight, and threads nicked to prevent loosening.
- M. Fastenings shall be concealed where practicable. Thickness of metal and details of assembly and supports shall give ample strength and stiffness. Joints exposed to weather shall be formed to exclude water.
- N. Do all cutting, punching, drilling and tapping required for attachment of anchor bolts and other hardware and for attachment of work by other Trades. All such cutting, punching, drilling, etc., shall be done prior to hot-dip galvanizing of the various components.
- O. Live loads shall be not less than the minimum required by law. Where specific live load are not set forth in the laws

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and codes applicable to this work, and are not given on the Drawings or in this Specification, designs shall be such as to support the live loads which may normally be imposed without failure, without deflection of more than 1/360 of length of any member, and without permanent deformation, all with a factor of safety of not less than 2 1/2 to 1.

P. Shop Painting

1. All ungalvanized ferrous metals under this Section shall be given a shop coat of rust inhibitive primer of type specified above.
 - a. Immediately before shop painting, remove all rust, loose mill scale, dirt, weld flux, weld spatter, and other foreign material with wire brushes and/or steel scrapers. Power tool clean in accordance with SSPC SP-3 (Power Tool Cleaning). Remove all grease with oil by use of solvent recommended by paint manufacturer. Sandpaper exposed surfaces as required to produce smooth, even finishes.
 - b. Apply paint by spray process in strict accordance with manufacturer's printed instructions to uniform thickness(es) recommended by manufacturer. Apply thoroughly and evenly and work well into corners and joints taking care to avoid sags and runs.
 - c. Do not paint surfaces to be embedded in concrete, or to be welded in the field. After field welds are complete, grind smooth and flush, thoroughly clean and then apply specified primer over all unprimed in the field by brush roller.
 - d. After erection, sand smooth and retouch all portions of the shop coats chipped or damaged during erection, and coat all field welds and connections with primer equivalent to that used for the shop coat.

Q. Installation

1. All materials shall be carefully handled and stored under cover in manner to prevent deformation and damage to the materials and to shop finishes, and to prevent rusting and the accumulation of foreign matter

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on the metal work. All such work shall be repaired and cleaned prior to erection.

2. Work shall be erected square, plumb and true, accurately fitted, and with the tight joints and intersections. All anchors, inserts and other members to be set in concrete or masonry shall be furnished loose by this Trade to be built-into concrete and masonry and by those Trades as the work progresses. Later cutting or drilling shall be avoided wherever possible.
3. All metal work shall be rigidly braced and secured to surrounding construction, and shall be tight and free of rattle, vibration, or noticeable deflection after installed.
4. Where members, other than expansion bolts or inserts, are fastened into concrete, set such members in holes formed as specified below, and secure permanently in place by installation of proprietary-type expanding grout manufactured specifically for such purpose, used strictly in accordance with manufacturer's directions. Holes to receive members shall be formed with galvanized sheetmetal sleeves, expanded polystyrene foam, or other approved method to provide at least 1/2 inch clearance around entire perimeter. At exposed applications, hold expanding grout back 1/2 inch from finish surface and fill voids with Portland cement grout to match color and texture of surrounding concrete surface.
5. Electrolytic Isolation
 - a. Where dissimilar metals are to come into contact with one another, isolate by application of a heavy coating of bituminous paint on contact surfaces in addition to shop coat specified above. Do not permit the bituminous paint in any way to remain on surfaces to be exposed or to receive sealant.

R. Description of Major Items

1. The items described below constitute the major part of the work of this Section, but are not intended or implied to cover each and every item that may be required to properly complete the work. Carefully

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review the Drawings to determine the full extent of the miscellaneous metal work required.

S. Miscellaneous Items

1. Carefully review all Drawings for miscellaneous metal items required but not specifically listed above, such as miscellaneous steel clip angles, miscellaneous steel bracketing, and other miscellaneous metal items as indicated on the Drawings, reasonably implied therefrom, or reasonably necessary for the thorough completion of the work.
2. Provide rigid and secure anchorage of all components whether or not specifically described in complete detail on the Drawings.

- T. Piping supports shall be coordinated with the building structure and shall span between roof beams as required.

1.311.20 WATERPROOFING, FLASHING AND COUNTERFLASHING

- A. Unless specifically indicated otherwise on the drawings, Contractor shall provide all counterflashing and waterproofing of all piping, ductwork and equipment provided by him, which pierce roofs, walls and other weatherbarrier surfaces.
- B. All work shall be performed in a workmanlike manner to ensure weatherproof installation. Any leaks developed due to Contractor's work shall be repaired at his expense, to the Engineer's satisfaction.
- C. Pipes passing through slabs shall have the sleeve extended above floors as hereinbefore specified to retain any water and the space between the pipe and sleeve caulked waterproof fire stopping. The top and the bottom shall be sealed with monolastic caulking compound.
- D. All flashing required for ductwork and piping penetrations shall be provided by the Contractor.

1.321.21 ELECTRICAL WORK, MOTORS, MOTOR CONTROLLERS

- A. See Divisions 26 for Electrical.

1.331.22 IDENTIFICATION OF MATERIALS

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- A. See Section 230553.
- 1.341.23 VALVE TAGS, NAMEPLATES AND CHARTS
- A. See Section 230553.
- 1.351.24 PARTS LIST AND INSTRUCTIONS FOR OPERATION AND MAINTENANCE
- A. Contractor shall thoroughly instruct the representative(s) of the Owner, to the complete satisfaction of the Engineer, in the proper operation of all systems and equipment provided by him. Contractor shall make arrangements, via the (GC / CM) as to whom the instructions are to be given in the operation of the basic and auxiliary systems and the periods of time in which they are to be given. The Engineer shall be completely satisfied that the representative of the Owner has been thoroughly and completely instructed in the proper operation of all systems and equipment before final payment is made. If the Engineer determines that complete and thorough instructions have not been given by Contractor to the Owner's representative, then Contractor then Contractor shall be directed by the Engineer to provide whatever instructions are necessary until the intent of this paragraph of the specification has been complied with. All time required for Owner's instruction to satisfy the above requirements shall be included in this Contract. No extra compensation for such instructions will be allowed.
- B. Contractor, shall submit to the Engineer for approval, a total of (6) typed sets, bound neatly in loose-leaf binders, of all maintenance and operating instructions for the installation, operation, care and maintenance of all equipment and systems. All data and literature furnished shall be specific for the make and model of the equipment furnished. General non-specific catalog data will not be acceptable. Information shall indicate possible problems with equipment and suggested corrective action. The manuals shall be indexed for each type of equipment. Each section such as fans, valves, plumbing fixtures, hot water heaters, boilers, air handling units, etc., shall be clearly divided from the other sections. A sub-index for each section shall also be provided. The methodology of setting-up the manuals shall be submitted to the Engineer and Owner through the Contractor the Contractor for approval prior to final submission of manuals.

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- C. The instructions shall contain information deemed necessary by the Engineer and shall include, but not be limited to, the following:
1. Instructional classes on equipment and systems operation for Owner's representative and maintenance personnel, by engineering staff of Contractor. Minimum of 8 hours of instruction for minimum of (6) people. Instruction shall include:
 - a. Explanation of manual and its use.
 - b. Summary description of the HVAC systems.
 - c. Purpose of systems.
 2. System
 - a. Detailed description of all systems.
 - b. Illustrations, schematics, block diagrams, catalog cuts and other exhibits.
 3. Operations
 - a. Complete detailed, step-by-step, sequential description of all phases of operation for all portions of the systems, including start-up, shutdown, adjusting and balancing. Include all posted instruction charts.
 4. Maintenance
 - a. Parts list and part numbers.
 - b. Maintenance, lubrication and replacement charts and manufacturer's recommendations for preventive maintenance, as applicable to his work.
 - c. Troubleshooting charts for systems and components.
 - d. Instructions for testing each type of part.
 - e. Recommended list of on-hand spare parts.
 - f. Complete calibration instructions for all parts and entire systems.

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g. Instruction for charging, filling, draining and purging, as applicable.

h. General or miscellaneous maintenance notes.

5. Manufacturer's Literature

a. Furnish complete listing for all parts required for models actually furnished.

b. Names, addresses and telephone numbers of manufacturers and suppliers.

c. Describe and operation of all models actually furnished.

d. Furnish all and only pertinent brochures, illustrations, drawings, cuts, bulletins, technical data, certified performance charts and other literature with the model actually furnished to be clearly and conspicuously identified.

e. Internal wiring diagrams and engineering data sheets for all items and/or equipment furnished under Contract.

f. Guarantee and warranty data.

6. Contractor shall furnish instructions for lubricating each piece of equipment installed by him. Instructions shall state type of lubricant, where and how frequently lubrication is required. Frame instructions under glass and hang in a location as directed by Engineer.

1.361.25 MANUFACTURER'S REPRESENTATIVE AND COMMISSIONING OF SYSTEMS

A. Contractor shall provide, at appropriate time or as directed by the Engineer, the on-site services of a competent factory trained Engineer or authorized representative of particular manufacturer of equipment provided under his Contract, such as for the HVAC unit, automatic temperature controls, provided under this Contract, to instruct the Owner, inspect, adjust and place in proper operating condition any item provided by him, as applicable.

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- B. The Contractor, as applicable, shall commission and set inset-in operating condition all major equipment and systems, ., in the presence of the applicable equipment manufacturer's representatives, and the Owner and Engineer's representatives. In no case will major systems and equipment be commissioned by any of the Contractor's forces alone, without the assistance or presence of the equipment manufacturers.
- C. A written report shall be issued by the particular equipment manufacturer and the Contractor summarizing the results of the commissioning and performance of each system for the Engineer's record. No additional compensation will be allowed for Contractor for such services.
- D. The Contractor shall prepare and submit to the Engineer for acceptance, a schedule of anticipated system commissioning. No system shall be commissioned without prior acceptance of the schedule by the Engineer and Owner. No systems shall be commissioned prior to submittal and acceptance of Operation and Maintenance Manuals.

1.371.26 CONNECTIONS TO EQUIPMENT

- A. Contractor shall provide all duct and/or pipe connections, condensate traps, drains, overflows, relief valves and vents, power connections, etc., to make equipment operable, as provided under other Sections of the specifications, as shown on the Architectural and/or each Trade's drawings and herein specified, including final connections to equipment to result in a complete system, fully operational. Coordinate location of all equipment with Engineer. Obtain installation diagrams and methods of installation of all equipment from manufacturers. Follow instructions strictly. If additional information is required, obtain same from Engineer. If equipment is indicated on the Architectural drawings, it shall also be construed and understood by the Mechanical Contractor to be constructed as shown on the HVAC drawings and shall be fully serviced and connected at no extra cost to the Owner.

1.381.27 ELECTRICAL ROOM REQUIREMENTS

- A. The Contractor [or Subcontractors] shall not install any piping, ductwork or equipment in or through electrical rooms, transformer rooms, electrical closets, telephone rooms or elevator machine rooms, unless piping, ductwork or equipment is intended to serve these rooms. If any Contractor violates this requirement, he shall remove

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and/or relocate all items as required at his expense and to the satisfaction of the Engineer.

1.391.28 HOISTING EQUIPMENT AND MACHINERY

- A. All hoisting equipment and machinery required for the proper and expeditious prosecution and progress of the work under this Contract shall be furnished, installed, operated and maintained in safe condition by Contractor for his material and/or equipment delivered to the designated hoisting area. All costs for hoisting operating services shall be borne by the Mechanical Contractor for all equipment and work under his charge.

1.401.29 STAGING

- A. All staging, exterior and interior, required to be over 8'-0" in height shall be furnished and erected by Contractor by Contractor for work under his charge and maintained in safe condition by him for proper execution of his work.

1.411.30 PHASING DEMOLITION AND MAINTAINING EXISTING SERVICES

- A. During the execution of the work, connections scheduled to be made shall be performed by Contractor as indicated on the drawings, as required by the job conditions in close cooperation with the Engineer and Owner's designated representative to facilitate the installation of the new systems and completion of this Contract. The Owner will require the continuous operation of all existing systems, while demolition, relocation work of new tie-ins are being performed. Outages required for construction purposes shall be scheduled for the shortest practical periods of time, in coordination with the Owner's designated representative for specific, mutually agreeable periods of time after each of which the interruption shall cease and service shall be restored. This procedure shall be repeated to suit the Owner's working schedule as many times as required until all work is completed.
- B. Prior to any deactivation and relocation, capping, valving, tie-in or demolition work, consult the drawings and arrange a conference with the Engineer and the Owner's representative in the field to inspect each of the items to be deactivated, removed or relocated. Care shall be taken to protect all equipment designated to be relocated and reused. Give notice to all parties, with a minimum of (5) working days in advance.

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- C. All draining of existing systems, filling and venting required to remove and relocate existing piping systems shall be included and provided under this Contract as required to perform the various equipment or piping relocations or new tie-ins.
- D. Except as otherwise noted, all deactivation, safe capping, valving, etc., of systems designated to be demolished shall be provided by each Trade, as applicable, and all demolition, removal and disposal of demolished materials shall be performed by the GC / CM. All equipment scheduled to be removed shall be inspected by the Owner, and, if he decides that such equipment is to be salvaged, Contractor shall deliver said equipment to an area within the site boundaries as determined by the Owner and Engineer.
- E. The phasing of the work shall be performed in strict accordance with the GC / CM construction schedule. The new systems will be installed and completely commissioned prior to occupancy. Coordinate requirements for temporary heat or rerouting of existing services as required to accomplish the construction schedule.

1.421.31 CONTROL WIRING

- A. The Contractor shall provide all control and interlock wiring for all systems provided under this Contract.
- B. All control wiring shall be installed in conduit and in accordance with the respective equipment manufacturer's requirements, and all connections shall be provided by the Contractor. All conduit and wiring provided by these Contractor shall be installed in accordance with the requirements of Section 26 of the specifications.

1.32 DUCT AND PIPE SLEEVES, PLATES AND ESCUTCHEONS, FIRESTOPPING AND SMOKEPROOFING

- A. Where piping and/or ductwork pass through masonry or concrete walls or drywall partitions or floors, each Contractor shall provide and set individual sleeves for each pipe or duct and all other work under his charge, as necessary for passage of all pipes and/or ducts. Sleeves shall be of sufficient size to provide 1/2" air space around the pipe or duct passing through (including insulation where pipes or ducts are internally/externally insulated). All openings shall be sealed, smoke proofed and

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made tight. Each Contractor shall be responsible for the exact location of sleeves provided under his Contract and shall coordinate all requirements for piping and ductwork sleeves.

- B. Each Contractor, for work under his charge, shall determine the required inside diameter of each individual wall opening or sleeve before ordering, fabrication or installation.
- C. Sleeves and inserts shall not be used in any portions of the building, where their use would impair the strength or construction features of the building. Elimination of sleeves must be approved by the Architect.
- D. Provide chrome plated brass escutcheons with set screw for exposed piping, in all areas except in mechanical rooms. In this area use plain brass or cast iron escutcheons suitable for painting. All escutcheons shall be sized to fit the bare pipe or insulation in a snug and neat manner. They shall be of sufficient size to cover sleeved openings for the pipes and of sufficient depth to cover sleeves projecting above floors. Escutcheons shall be as manufactured by Beaton & Caldwell, Dearborn Brass, or Grinnell.
- E. Pipe or duct sleeves shall be made of Schedule 40 pipe, 20 gauge galvanized steel or 16 gauge steel as follows:
 - 1. Sleeves on pipes passing through masonry or concrete construction shall be Schedule 40 pipe.
 - 2. Sleeves on ducts passing through concrete construction shall be 20 gauge steel unless required otherwise by item 4. Below.
 - 3. Sleeves on pipes or ducts passing through fire rated partitions shall be 16 gauge steel.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED

END OF SECTION 230500

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0SECTION 230514 - VARIABLE FREQUENCY DRIVES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 WORK INCLUDED

- A. Furnish and install variable frequency drives (VFD's) for mechanical equipment as scheduled on the drawings and specified herein. The term VFD shall refer to the entire assembly including but not limited to the by-pass.
- B. The VFD's shall comply with the latest applicable standards of ANSI, IEEE, NEMA, NEC, UL and City Test Lab. The controllers shall be rated as indicated. As a minimum, the full load output current of the drive shall be equal to the equivalent motor horsepower as listed by NEC Table 430-150.
- C. Drive horsepowers shall be minimum size as indicated. Coordinate size with driven equipment manufacturer.
- D. Provide UL listed, accessory reactors to be UL listed. Bypass panels shall be constructed of UL recognized components assembled in a UL listed enclosure in strict accordance with the NEC for electrical safety. In addition, the assembly shall be UL listed.

1.03 RELATED SECTIONS

- A. Examine all drawings and criteria sheets and all other Sections of the Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this Section.

1.04 REFERENCES

- A. Applicable provisions of the following Codes and Trade Standard Publications shall apply to the work of this Section, and are hereby incorporated into, and made a part of the Contract Documents.
- B. Material standards shall be as specified or detailed hereinafter and as follows:

1. IEEE: Institute of Electrical and Electronic Engineers
2. NEMA: National electrical Manufacture's Association
3. MG 1-78: Motors and Generators
4. NEC: National Electrical Code
5. ANSI: American National Standards Institute
6. UL: Underwriter's Laboratories

1.05 SUBMITTALS

- A. See Section 230500 and General Condition for additional requirements.
- B. Product Data: Provide product description and list of materials, including the following:
 1. Harmonic calculations
 - a. List of all drives.
 - b. Simplified one line diagram indicating linear as well as drives, transformers and PCC.
 - c. Technical description of the program used for the calculations.
 - d. Description of all inputs and outputs from the program.
 2. Complete drawings furnished and approved before proceeding with manufacture. Drawings shall consist of a specific bill of materials, connection diagrams and suitable outline drawings showing details necessary to locate conduit stub-ups and field wiring.
 - a. Details including all labeling.
 - b. Assembled panel short circuit rating and how it will be labeled.
 - c. Heat release of the drive.
 3. Description of field testing.

- a. Proposed schedule of testing indications coordination with occupancy.
4. Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.

1.06 QUALITY ASSURANCE

- A. Manufacturers must have more than ten (10) years of documents experience in the design, testing and manufacturing of specified or similar products.
- B. Manufacturer must provide written certification that the products provided meet or exceed the specification requirements. An executive officer of the company must sign the written certification.

1.07 WARRANTY

- A. Attention is directed to provisions of the General Conditions and Supplementary General Conditions regarding guarantees and warranties for work under this Contract.
- B. Manufacturers shall provide guarantees for work under this Contract. However, such guarantees shall be in addition to and not in lieu of all other liabilities which the manufacturer and the Contractor may have by Law or by other provisions of the Contract Documents.
- C. All materials, items of equipment and workmanship furnished under each Section shall carry the standard warranty against all defects in material and workmanship. Any fault due to defective or improper material, equipment, workmanship or design which may develop shall be made good, forthwith, by and at the expense of the Contractor including all other damage done to areas, materials and other systems resulting from this failure.
- D. The Contractor shall guarantee that all elements of the systems provided under his Contract, are of sufficient capacity to meet the specified performance requirements as set forth herein or as indicated.
- E. Upon receipt of notice from the Owner's representative of failure of any part of the systems or equipment during the warranty period, the affected part or parts shall be replaced by the Contractor, within three (3) working days, at no cost to the Owner.

- F. The Contractor shall furnish a written guarantee covering the above requirements before the final payment is made.

PART 2 - PRODUCTS

2.01 VARIABLE FREQUENCY DRIVES

A. General

1. Provide a complete variable frequency drive (VFD) (in a single enclosure) of capacity, quantity and characteristics as described in this specification and as shown and scheduled on the drawings. Acceptable manufacturers contingent on compliance with specifications are:
 - a. 25 HP and Less
 - 1) ABB
 - 2) Halmar Robocon Group
 - 3) Square D
 - 4) General Electric
 - 5) Yaskawa
 - 6) Or Approved equal
2. All VFDs (6 & 18 pulse) shall be of the same manufacturer.
3. Each drive and assembly shall be U.L. listed and labeled.
 - a. Label shall include the AIC rating for the assembly which shall not be less than 100,000 AIC. Any unit shipped without such label shall be removed from the job with NO EXCEPTIONS. This also includes six pulse drives with or without bypasses.
4. Each drive shall be mounted with it's accessories in a single cabinet.
5. Installation and start-up services for the equipment shall be covered by this specification.

6. Input control signal shall be compatible with automatic controls and/or building automation control system. Submit written, signed off coordination with submittal.
7. Complete drawings shall be furnished and approved before proceeding with manufacture. Drawings shall consist of a specific bill of materials, connection diagrams and suitable outline drawings showing details necessary to locate conduit stub-ups and field wiring.
8. The VFD shall comply with the latest applicable standards of ANSI, IEEE and NEMA. The controllers shall be rated as shown in the drawings. As a minimum, the full load output current of the drive shall be equal to the equivalent motor horsepower as listed by NEC Table 430-150.
9. Drive horsepowers shall be minimum size as indicated. Coordinate size with driven equipment manufacturer.
10. The VFD manufacturer shall supply with submittal information, harmonic calculations made in accordance with IEEE 519-1992 Standards showing the specified THVD, line notching and the specified THCD limits are met. Calculations shall assume worst case system conditions. System 1-line, 480V transformer data, standby generator data, and primary fault current data required to make these calculations are provided in the system short circuit study and can be obtained from Contractor. The submittal shall include, as a minimum, the following information:
 - a. All input data and assumptions.
 - b. Explanation of method used to perform the analysis.
 - c. All calculations and computer printouts used in the analysis, including input documentation.
 - 1) List all drives and accessories.
 - 2) Explanation of all inputs
 - 3) Explanation of all outputs.
 - d. A system impedance diagram based on the Electrical one-line diagrams. It shall be the drive manufactures responsibility to obtain all information required.

- e. All calculations shall be in accordance with IEEE 519 with all drives at 100% speed. The point of common coupling shall be the secondary connection of the transformer supplying that group of devices. These calculations shall be done with the transformer loaded to no more than 70% of its nominal capacity. These calculations shall also be done with all 18-pulse or greater drives running as well as the smaller drives running.
- f. Each point of common coupling shall be defined as the secondary side of the transformer that feeds that group of drives. At the point of common coupling, the following numbers shall meet with the maximum load on the transformer no greater than 70% of its nominal capacity.
 - 1) Total harmonic voltage distortion is less than 3%
 - 2) Total harmonic current distortion is less than 5% and harmonic table requirements $I_{SC} / I_L < 20$
- g. A detailed description of the tests, procedures and supporting calculations required to substantiate the installed systems compliance with the specified THD limits.
 - 1) The description shall include information on the proposed test equipment and test conditions.
 - 2) Include the name and qualifications of the firm which will conduct the field tests.
- h. Submittals without calculations will not be reviewed.
- 11. Drives shall be capable of the full rated motor horsepower at all carrier frequencies of that drive.

B. Construction

- 1. VFDs 30 HP and Larger
 - a. VFDs 30 HP and larger shall be 18-pulse (or greater) input. Provide data and calculations showing the drive harmonics do not exceed the following numbers at the power connection to the drive.

- 1) Total harmonic voltage distortion: Less than 3%
- 2) Total harmonic current distortion: Less than 5% and harmonic table requirements for $I_{SC}/I_L < 20$.

Note: These are the maximum harmonics that can be generated by each of these drives.

b. The use of the following devices is permitted:

- 1) A.C. Line reactors
- 2) DC chokes
- 3) KMP Transformers
- 4) KMP + XFMR Filter Transformers

c. The use of the following devices is not permitted:

- 1) Passive filters.
- 2) Broad band filters.

2. VFDs 25 HP and Less

- a. VFDs 25 HP and less shall be 6-pulse (or greater) input. Provide data and calculations showing the drive harmonics.
- b. 5% line reactors shall be provided on each drive as a minimum.
- c. The use of the following devices is not permitted:
 - 1) Passive filters.
 - 2) Broad band filters.

d. The use of the following devices is permitted:

- 1) Changing additional drives to 18 pulse or greater.

3. Harmonic Table

I_{SC} / I_L	Harmonic Order (Odd Harmonics)					THD
	H<11	11<h17	17<h23	23<h35	35<h	
<20	4.0	2.0	1.5	0.6	0.3	5.0
20-50	7.0	3.5	2.5	1.0	0.5	8.0
50-100	10.0	4.5	4.0	1.5	0.7	12.0
100-1000	12.0	5.5	5.0	2.0	1.0	15.0
>1000	15.0	7.0	6.0	2.5	1.4	20.0

4. 18 Pulse Transformer

a. Auto transformer

- 1) Voltage 480.
- 2) Input variation less than 3%.
- 3) Insulation Class 220°C
- 4) Temperature rise 150°C
- 5) With 7.5% AC input line reactors for proper current balance.
- 6) Output Voltage unbalance less than 2% for each bridge
- 7) Output current shall be 1/3 of rated input

b. Isolation Transformer.

- 1) Voltage 480.
- 2) Input variation less than 3%.
- 3) Output Voltage unbalance less than 2% for each bridge
- 4) Output current shall be 1/3 of rated input

5. All Drives

- a. The VFD shall be of the pulse width modulated (PWM) design converting the fixed utility voltage and frequency to a variable voltage and frequency output via a 2-step operation. VFDs utilizing a 3rd power section are not acceptable. Efficiency shall exceed 96% at 100% speed and load. Line

side displacement power factor shall exceed (0.95) regardless of speed and load. The VFD shall be rated for 110% current for (1) minute for variable torque loads and 150% current for (1) minute for constant torque loads.

- b. VFD's located indoors shall be housed in a signal NEMA 1 metal enclosure (including 18-pulse transformer, filters, line reactor, and other required accessories).
- c. Drives located outside shall be provided with a single NEMA 3R enclosure and an independent heating and cooling system to maintain manufacturer's ambient operating conditions.
- d. Drives located other than outside (submit list of all drives individually indicating):
 - 1) Space drive is located.
 - 2) Space ventilation is adequate, space air conditioning is adequate or the size of the cooling provided in the drive.
 - 3) Space heating is adequate or the size of the heater provided in the drive.
- e. Standard operating conditions shall be:
 - 1) Incoming 3-phase 480 VAC power, +5% or - 10%, 60 Hz.
 - 2) Humidity 0 to 95% (non-condensing and non-corrosive).
 - 3) Altitude 0'-0" to 3,300'-0" above sea level.
 - 4) Ambient temperature 0° to 40°C.
- f. VFDs shall include the following system interfaces:
 - 1) Speed reference interface with a differential amplifier or isolated input 0-10 VDC or 4-20 mADC signal.
 - 2) Run relay with an isolated set of Form C contacts.

- 3) Minimum of 2 programmable contacts.
 - 4) Trip contacts (Form C).
 - 5) VFD will accept an external trip contact and indicate so on the display.
 - 6) Dedicated terminal blocks for interface with maintained remote start contacts.
 - 7) Output signal proportional to output frequency (0-10 VDC or 4-20 mA DC).
 - 8) Output signal proportional to output current (0-10 VDC or 4-20 mA DC).
 - 9) Provided with communications chip to provide complete interface with the ATC control and automation system.
- g. The VFD shall include the following protective features:
- 1) Lockable Fused disconnect (or breaker) rated for 100,000 AIC.
 - 2) Electronic instantaneous overcurrent protection.
 - 3) DC bus undervoltage protection.
 - 4) DC bus overvoltage protection.
 - 5) Ability to withstand output line-to-line short circuits without component failure.
 - 6) Status indication via an LED display of the following protective functions:
 - a) DC Bus Undervoltage
 - b) Overcurrent
 - c) DC Bus Overvoltage
 - d) Controller Overtemperature
 - e) Overload
 - f) Overload Warning

- g) Overfrequency and Phase Loss
- h) A single light to indicate a VFD trip is not acceptable.
- 7) Overload capability shall be 110% of the inverter rating for (1) minute.
- 8) Selectable auto restart.
- 9) VFD will catch a motor spinning in the forward or reverse direction upon starting.
- 10) Upon loss of the input signal (4-20 mA), the drive will stop or go to preset speed.
- h. Standard adjustments shall include:
 - 1) Minimum frequency (4-60 Hz)
 - 2) Maximum frequency (40-120 Hz)
 - 3) Minimum of three (3) preset speeds (4-120 Hz) initiated by contact closures
 - 4) Minimum of three (3) acceleration times (2-300 seconds)
 - 5) Minimum of three (3) deceleration times (2-300 seconds)
 - 6) Minimum speed dwell time (0-18 seconds)
 - 7) Voltage boost (0-40V) for starting torque control
 - 8) Adjustable Carrier frequency 700-8,000 Hz for motor noise reduction or flexible switching technology. This adjustment shall be without derating the drive or motor.
 - 9) Current limit (70-120%)
 - 10) Critical frequency avoidance ([2] bands with 10 Hz adjustable widths)
- i. Door mounted operator controls and status indication from the LED display shall include:

- 1) Run/stop selection and LED indication (keypad or remote)
 - 2) Speed control selection and LED indication
 - 3) Forward/Reverse selection
 - 4) Manual speed adjustment
 - 5) Frequency meter
 - 6) Motor RPM
 - 7) Ammeter
 - 8) Output voltage
 - 9) Elapsed time meter
- j. The keypad shall have an LED display. The reverse button and the programming functions may be locked out if desired.
6. The following list of options shall be included:
- a. Input lockable disconnect rated 100,000 AIC.
 - b. Thermal motor overcurrent relay.
 - c. Bypass which includes an output contactor electrically and mechanically interlocked with a bypass contactor, run relay including control logic, status lights and a thermal motor overcurrent relay. The complete bypass system and Inverter/Off/Bypass selector switch shall be packaged in a single VFD enclosure. The bypass shall include a starter.
 - d. Electronics shall allow VFD to follow discrete increase speed and discrete decrease speed contact closures from a photohelic or similar device.
 - e. 120V control transformer and circuitry.
 - f. Output line reactors or output filters when the drive location and the motor are more than 100 feet apart.

- g. Interior heaters shall be provided to maintain the minimum drive temperature when the drive is off.
- h. A Customer Interlock Terminal Strip - provide a separate terminal strip for connection of fire, smoke, freeze contacts and external start command. All external interlocks and start/stop contacts shall function with drive in hand, auto or bypass.
 - 1) Damper control circuit shall be operable in the hand, auto and bypass.

7. Service

- a. The VFD manufacturer shall provide a start-up service package for all VFDs provided. Service shall include inspector for final adjustment, operational checks, and a final report for record purposes. The service package shall include a (1) year parts and labor warranty and 2 year parts warranty each from date of written acceptance and be performed by local factory trained service engineers. The service center must be permanently located within (200) miles of the job site and able to provide 24-hour service.

8. Protection

- a. The VFD shall be protected against damage at all times. The drive shall be stored in a clean, dry environment with temperature and humidity within the range as specified by the drive manufacturer. Space heaters shall be energized controlled storage as recommended by the manufacturer. Storage space shall be environmentally controlled.

9. Factory Tests and Checks

- a. VFD power semiconductors and diodes shall be 100% inspected and tested, including load testing.
- b. Small signal semiconductors, resistors, capacitors and diodes shall be lot sampled. Testing shall include parameter, as well as functional characteristics.
- c. All printed circuit boards shall be tested under a temperature cycling (0°C to +65°C) 24-hour load

test and then functionally tested via fault finder bench equipment prior to unit installation.

- d. All final assemblies shall be tested at full load with application of line-to-line and line-to-ground bolted faults. The VFD shall trip electronically without device failure.
- e. After all tests have been performed, each VFD shall undergo a 24-hour burn-in test. The drive shall be burned-in at 100% inductive or motor load for (24) hours without an unscheduled shutdown.

- 10. A (1) day training course for Owner's personnel shall be presented by representatives of the manufacturer at the jobsite.

PART 3 - EXECUTION

3.01 VFD INSTALLATION

- A. Install in accordance with manufacturer recommendations, Contract Drawings, and reviewed submittals.
- B. Install to meet the Local and State Electrical Code and so as to ensure easy accessibility for service, removal, or replacement of all components.
- C. Provide supplemental steel, support, rods and hangers necessary to hang or mount VFDs.
- D. Receive and inspect VFDs to ensure they are without defect. Defective or damaged VFDs shall be returned to the manufacturer.
- E. Protect equipment to prevent damage from water, dirt, or accident. Protection shall include, but not be limited to, temporary plastic wrap to maintain equipment in original factory condition.
- F. Wiring installation and handling shall be in accordance with manufacturer's recommendations.
- G. Provide field testing (as described in Paragraph F, of this above Section).

- H. All VFDs shall be installed inside indoor inside mechanical rooms or as directed by owner, whether the VFD locations are specifically shown on contract drawings or otherwise.
- I. All VFDs shall be provided with 42" clear space in front of the unit and shall be mounted on structural mounts.

3.02 FIELD TESTS AND CHECKS

- A. Testing, checkout and start-up of the VFD equipment shall be performed under the technical direction of the manufacturer's service engineer. Under no circumstances are any portions of the drive system to be energized without authorization from the manufacturer's representative.
- B. The Contractor shall provide independent harmonic testing by an independent testing company. Provide readings with printouts of the harmonic current at each harmonic as well as the total voltage distortion. The following readings shall be provided:
 - 1. At each point of common coupling:
 - a. With all drives running with load
 - b. With all drives off
 - 2. At the power connection to each drive:
 - a. With the drive running loaded
 - b. With drive off
 - 3. All the above data shall be submitted to the Architect for review. If these tests shown that the drives are not in compliance with the Specifications, the drive manufacturer shall make all changes required to comply with the Specifications at no cost to the Owner. If required, this could mean replacing the drives that are not in compliance.
 - 4. A copy of all tests and checks performed in the field, complete with meter readings and recordings, where applicable, shall be submitted to the Owner for this record.

END OF SECTION 230514

SECTION 230529 - HANGERS AND SUPPORTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 WORK INCLUDED

- A. Furnish and install all hangers, supports and assemblies for all parts of the mechanical systems. This shall include all ducts and equipment specified in this Division and as shown on the drawings
- B. All materials shall be new and manufactured for the specific purpose of supporting systems, equipment, pipes, ducts, conduits and accessories.
- C. All system components shall be installed in accordance with local codes including seismic isolation as required and specified under Section 230540.
- D. Secure all permits and local/state approval for the components as specified and included under this Section.

1.03 RELATED SECTIONS

- A. Examine all drawings and criteria sheets and all other Sections of the Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this Section.
- B. Refer to Section 230540 - Mechanical Vibration Controls a for specified information related to and affecting this section.

1.04 REFERENCES

- A. Applicable provisions of the following Codes and Trade Standard Publications shall apply to the work of this Section, and are hereby incorporated into, and made a part of the Contract Documents.
 - 1. Material standards shall be as specified or detailed hereinafter and as following:

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2. ASME B31.9 - Building Services Piping, The American Society of Mechanical Engineers.
3. ASME B31.1 - power piping.
4. ASHRAE Systems and Equipment Handbook.
5. ASTM F 708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.
6. MSS SP-58 - Pipe Hangers and Supports - Materials, Design and Manufacture; Manufacturers Standardization Society of the Valve and Fittings Industry.
7. MSS SP-69 - Pipe Hangers and Supports - Selection and Application; Manufacturers Standardization Society of the Valve Fittings Industry.
8. MSS SP-89 - Pipe Hangers and Supports - Fabrication and Installation Practices; Manufacturers Standardization Society of the Valve and Fittings Industry.
9. NFPA-13 - Installation of Sprinkler Systems
10. MSS-SP-127-2001 - Bracing for Piping Systems.

1.05 SYSTEM DESCRIPTION

- A. In addition to special hangers and supports specified elsewhere in this Section and shown on the drawings for ducts , piping and equipment, furnish and install safe and substantial means of support for all parts of the mechanical systems. Shop drawings shall be submitted for review and approval for all supports. All piping and ductwork, shall be installed with vibration isolators. This requirement is mandatory and shall be strictly enforced.
- B. All piping shall be hung to true alignment, using appropriate and substantial hanger arrangements. Wire and strap hangers will not be permitted. Hangers shall be located so that piping and hangers will be clear of other piping, hangers, conduits, lighting and other obstructions.
- C. The hanging and supporting of piping and equipment shall conform to recommendations of the manufacturers of same and American National Standard, ANSI/MSS SP-58 and SP-69 latest

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edition, except where requirements of this specification exceed the above referenced Standards.

1.06 SUBMITTALS

- A. See Section 230500 and General Conditions for Additional Requirements.
- B. All brackets and hangers shall be submitted for review. Include the method of hanging and supporting all piping, ductwork and equipment.
- C. The Architect is to be notified when the first bracket is assembled so that the installation can be reviewed in the field.
- D. Provide location of all inserts to be used for hanging ductwork, piping and equipment and the weight of all components (including water weight).

1.07 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing products of the type specified in Part 2 - Products.
- B. Installer: Company specializing in performing work of the type specified in this section, with documented experience.
- C. Welders: Certify in accordance with ASME.

1.08 REGULATORY REQUIREMENTS

- A. Conform to ASME B31.9 code for installation of piping system and supports.
- B. Conform to ASME B31.1 code for power piping.
- C.B. ASTM F708 for design and installation of pipe hangers..
- D.C. Welding Materials and Procedures: Conform to ASME (BPV IX) and applicable state labor regulations
 - 1. Provide certificate of compliance from authority having jurisdiction, indicating approval of welders.

1.09 DELIVERY, STORAGE AND HANDLING

- A. All hangers and supports shall be delivered in containers and shall be kept in a dry and protected area.
- B. All exposed hangers, supports, etc. shall be given 2 coats of rust resistant paint of a color selected by the Architect prior to installation.

1.10 ENVIRONMENTAL

- A. Do not paint or install inserts, hangers and/or supports when environmental conditions are outside the specific limitations of the referenced codes and manufacturer's recommendations.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Pipe supports shall be of type and figure number as specified.
- B. Acceptable manufacturers subject to compliance with the specifications shall be as follows:

1. Pipe Hangers

- a. Carpenter & Patterson
- b. B-Line
- c. Grinnell
- d. National Pipe Hanger Corp.
- e. Piping Technology & Products Inc.
- f. PHD Manufacturing, Inc.

2. Constant Force Hangers.

- . Anvill International, Inc.
- . Piping Technology & Products Inc.
- . Piping Accessories, Inc.
- . Rilco Manufacturing Co.
- . PHD Manufacturing, Inc.

8.2. Channel Support Systems

- a. B-Line Systems, Inc.
- b. Grinnell Corp. Power-Strut Unit
- c. GS Metals Corp.
- d. Michigan Hanger Co., Inc. O-Strut Div.

- e. National Pipe Hanger Corp.
- f. Thomas & Betts Corp.
- g. Unistrut Corp.
- h. Wesanco, Inc.

9.3. Thermal-Hanger Shield Inserts

- a. Carpenter & Patterson, Inc.
- b. Michigan Hanger Co., Inc.
- c. PHS Industries, Inc.
- d. Pipe Shields, Inc.
- e. Rilco Manufacturing Co., Inc.
- f. Value Engineered Products, Inc.

2.02 PIPE HANGERS

- A. Bracket assemblies for supporting piping are to be fabricated by welding and all irregular surfaces are to be smoothed up by grinding. Exposed hangers, supports and brackets are to be given (2) coats of rust resistant paint of the color as selected by the Owner.
- B. Additionally, provide for Engineer's review, the following:
 - 1. Location of all inserts to be used for hanging ductwork and piping where applicable and the weight of such pipe or equipment to be hung, including the weight of the proposed contents (refrigerant and/or condensate), valves and insulation.
 - 2. Method of hanging and support of all piping, ducts and other equipment.
- C. All pipe supports shall be of type and arrangement as hereinafter specified. They shall be so arranged as to prevent excessive bending stresses between supports.
- D. All bracket clamp and rod sizes indicated in this specification are minimum sizes only. This Section shall be responsible for structural integrity of all supports. All structural hanging materials shall have a safety factor of (5) built in. Beam clamps shall be 2-sided steel clamps designed to firmly attach to the flange of the beam with the load directed downward on the centerline of the beam web. Beam clamps shall be similar to B-Line #B3055, or approved equal.

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- E. Other forms of hangers and supports shall be used to accommodate special or unusual job conditions or conditions not covered herein, subject to the approval of the Architect. When special conditions require the use of concrete inserts which are not "built in", such inserts may be used in locations approved by the Architect and shall be Phillips "Red Head" or approved equal. Explosive powder studs or detonator assisted studs or anchors will not be permitted.
- F. All pipes shall be hung free of dependence on pipe sleeves for support.
- G. All auxiliary steel required for pipe, duct and equipment supports shall be furnished and installed by the Contractor.
- H. Threaded pipe, chains, wire and perforated straps will not be accepted. No piping shall be supported from ductwork, conduit or other piping. All system components and equipment shall be independently supported. Distribute hangers on parallel piping to avoid overloading of structure.
- I. Roller type supports shall be used for pipes subject to axial movement (all hot water steam, condensate and any emergency generator exhaust). They shall be braced so that movement occurs in roller rather than support rods. This requirement shall apply to piping 2 1/2" and up.
- J. Constant force support hangers shall be provided for the emergency generator exhaust piping as determined by the stress and seismic analysis. Constant force hangers shall be similar to Anvil International, Inc. and they shall be pre-engineered to meet the loads and expansion for the vertical risers and off sets if any.
- K.I. Hangers and supports used for systems exposed to weather shall be hot dipped galvanized in accordance with ASTM A153-73 or A123. Rods and nuts shall be electro-galvanized.
- L.J. All horizontal water, drain, waste, vent and rainwater piping shall be hung with clevis steel hangers similar to B-Line #B3100. Groups of pipes in the same horizontal plane and with the same pitch may be supported on B-Line #3160 gang hangers. Wall brackets similar to shall be B-Line #B3066 and #B3077.

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M.K. All pipes which are hung so that the centerline of the pipe is less than 10" below the point of suspension of the hanger rod and all hydronic hot water piping shall be supported on roller hangers similar to B-Line #B3110.

N.L. Unless otherwise noted, maximum hydronic pipe hanger spacing shall not exceed the recommendations of the pipe manufacturer and the following:

1. For 1/2" copper and steel pipe: 5'-0" o.c.
2. For pipe 3/4" to 1 1/2": 8'-0" o.c.
3. For pipe 2" to 8": 10'-0" o.c.
4. For pipes 10" and up: 15'-0" o.c.
- 5.3. In addition, hangers shall be installed within 2'-0" of each change in direction and on each side of valves 3" in size and up.

O.M. Hanger rods shall be of steel and not less in diameter than:

1. For pipe 2" and under: 3/8"
2. For pipe 2 1/2" and 3": 1/2"
0. For pipe 4" and 5": 5/8"
0. For pipe 6": 3/4"
0. For pipe 8", 10" and 12": 7/8"
0. For pipe 14" and 16": 1"
0. For pipe 18" and up: 1 1/4"

U. Insulated steel piping 2 1/2" and up, except chilled water, shall be fitted with steel pipe covering protection saddles similar to B-Line #B3163 and of the same depth as the specified insulation. Saddles shall be tack welded to the pipe and filled with loose insulation. Standard length saddles may be cut in (2) equal sections for attachment to pipes 6" diameter and under.

- V.N. Insulated piping 2" and under, except chilled water, shall be fitted with 16 gauge steel covering protectors at each hanger location similar to B-Line #B3151.
- W. Chilled water piping shall be insulated with high density hydrous calcium silicate shields where hangers occur similar to #B3380CW. Special care shall be exercised to assure a continuous vapor barrier installation to protect the system and prevent sweating.
- X.O. All vertical piping shall be supported with steel riser clamps similar to B-Line #B3773. Such clamps on copper tubing shall be applied over couplings only.
- Y.P. All pipes suspended at an elbow shall be hung using plate lugs similar to Grinnell #HS.53 with forged steel clevis similar to B-Line #B3201.
- Z.Q. Spring hanger locations shall be provided as specified herein, under vibration isolation, and shall be Grinnell, pre-engineered to meet loads and movements in accordance with ANSI B.31.1.10, where applicable.
- AA.R. Drop rods for hangers may be used wherever possible and shall be installed prior to slabs being poured. Drop rod details shall be submitted to the Architect and Engineer for review.

2.03 DUCT HANGERS

- A. See Specification 233100 Sheet Metal.

2.04 MISCELLANEOUS MATERIALS

- A. Mechanical-Anchor Fasteners: Insert-type attachments with pull-out and shear capacities appropriate for supported loads and building materials where used.
- B. Structural Steel: ASTM A 36M, steel plates, shapes, and bars, black and galvanized.
- C. Grout: ASTM C 1107, Grade B, factory-mixed and packaged, nonshrink and nonmetallic, dry, hydraulic-cement grout.
 - 1. Characteristics: Post hardening and volume adjusting recommended for both interior and exterior applications.

2. Properties: Nonstaining, noncorrosive and nongaseous
3. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.01 PREPARATION

- A. All hangers, rod and supports shall receive two (2) coats of rust inhibitive paint.
- B. Provide inserts for placement in concrete formwork.
- C. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
- D. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
- E.D. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

3.02 INSTALLATION

- A. Pipe Hangers and Supports.
 1. Install in accordance with ASME B31.9, ASTM F 708, or MSS SP-89 or NFPA-13.
 2. Support piping, ductwork and equipment as specified under Part 2.
 3. Install hangers to provide minimum ½ inch space between finished covering and adjacent work.
 4. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
 5. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.
 6. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.

7. Provide copper plated hangers and supports for copper piping or between hanger support and piping.
 8. Prime coat (2 coats rust inhibitive paint) exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
 9. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- B. Where pipe support members are welded to structural building framing, scrape, brush clean and apply two coats of zinc rich primer to welds.

3.03 INSERTS

- A. Use inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
- B. Finish inserts, flush with slab surface.
- C. Inserts: Steel, slotted type, factory-painted.
1. Single rod: Similar to Grinnell Figure 281.
 2. Multi-rod: Similar to Carpenter and Paterson 1480 Type 1.
 3. Clip form nails flush with inserts.
 4. Maximum load 75 percent of rating.

3.04 SUPPORTS FROM BUILDING CONSTRUCTION

- A. Inserts, Beam Clamps, Steel Fishplates (in concrete fill only), Cantilever Brackets or Other Means.
- B. Submit for Review.
- C. Grouped Lines and Services
1. Trapeze Hangers fabricated of Bolted Angles or Channels.
- D. Where Building Construction is Inadequate

1. Provide Additional Framing.
2. Submit for Review.

3.05 EXPANSION DEVICES

- A. Expansion anchors: Similar to Hilti "Drop-In Anchor HDI" flush type.
- B. Drill concrete to receive required expansion cases on concrete fasteners.
- C. Install in shear only, not in tension.

3.06 EQUIPMENT BASES AND SUPPORTS

- A. Provide rigid anchors for ducts and pipes immediately after vibration connections to equipment.
- B. Refer to Specification Section 15001 for additional information.
- C. Fabricate structural-steel stands to suspend equipment from structure above or to support equipment above floor.
- D. Grouting: Place grout under supports for equipment and make smooth bearing surface.

3.07 METAL FABRICATION

- A. Cut, drill, and fit miscellaneous metal fabrications for heavy-duty steel trapezes and equipment supports.
- B. Fit exposed connections together to form hairline joints. Field-weld connections that cannot be shop-welded because of shipping size limitations.
- C. Field Welding: Comply with AWS D1.1 procedures for shielded metal arc welding appearance and quality of welds, and methods used in correcting welding work, and with the following:
 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base-metals.
 2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.
4. Finish welds at exposed connections so no roughness shows after finishing and contours of welded surfaces match adjacent contours.

3.08 ADJUSTING

- A. Hanger Adjustment: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

3.09 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 230529

SECTION 230548 - MECHANICAL VIBRATION CONTROLS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 WORK INCLUDED

- A. Furnish and install all necessary vibration isolation materials to eliminate excessive noise and vibration from all building mechanical systems.
- B. All systems shall be installed in accordance with IBC 2000, use group III, and local codes including requirements for seismic restraints and hold downs.
- C. Secure all permits and local/state approval for the installation of all components included under this Section.
- D. The work in this Section shall include the following:
 - 1. Vibration isolation elements for equipment.
 - 2. Equipment isolation bases.
 - 3. Piping flexible connectors.

1.03 RELATED SECTIONS

- A. Examine all drawings and criteria sheets and all other Sections of the Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this Section.

1.04 REFERENCES

- A. Applicable provisions of the following Codes and Trade Standard Publications shall apply to the work of this Section, and are hereby incorporated into, and made a part of the Contract Documents.
- B. Material standards shall be as specified or detailed hereinafter and as follows:
 - 1. NEBB- Procedural Standards for Measuring Sound and Vibration; National Environmental Balancing Bureau.
 - 2. NEBB- Sound and Vibration in Environmental Systems; National Environmental Balancing Bureau.

3. SMACNA - Guidelines for Seismic Restraint of Mechanical Systems.
4. ASHRAE Guidelines - HVAC Applications; Chapter- Sound and Vibration Control, Chapter - Seismic Restraint Design, Latest Edition.

1.05 SUBMITTALS

- A. See Section 230500 and General Conditions for additional requirements.
- B. The Vibration Isolation Submittal shall include descriptive data for all products and materials including the following:
 1. Product Descriptions
 - a. A complete description of products to be supplied, including product data, dimensions, specifications and installation instructions.
 - b. An itemized list of isolated and non-isolated equipment. Detailed schedule and selection data for each vibration isolator and seismic restraint supporting equipment, including:
 - 1) Equipment identification mark
 - 2) Isolator type
 - 3) Actual load
 - 4) Static deflection expected under actual load
 - 5) Specified minimum static deflection
 - 6) Additional deflection-to-solid under load
 - 7) Ratio of spring height under load to spring diameter
 - 8) Base type
 - 9) Seismic restraint type
 - c. Steel rails, steel base frames, and concrete inertia bases showing all steel work, reinforcing, vibration isolator mounting attachment method, and location of equipment attachment bolts.
 2. Show equipment base construction for all equipment, including dimensions, structural member sizes and support point locations.
 3. Indicate isolation devices selected with complete dimensional and deflection data.

4. Show all methods of suspension and support for ceiling hung equipment.
5. Detail methods of isolation for ducts and pipes piercing walls and slabs.
6. Provide specific details of seismic restraints and anchors, including number, size and locations for each piece of equipment.
7. Provide special details necessary to convey complete understanding of the work to be performed.

1.06 QUALITY ASSURANCE

- A. All vibration isolators shall have calibration markings or some method to determine the actual deflection under the imposed load after installation and adjustment.
- B. All isolators shall operate within the linear portion of their load versus deflection curves. Load versus deflection curves shall be furnished by the manufacturer and must be linear over a deflection range of at least 50% above the design deflection.
- C. The theoretical vertical natural frequency for each support point, based upon load per isolator and isolator stiffness, shall not differ from the design objectives for the equipment as a whole by more than $\pm 10\%$, and shall be non-resonant with equipment forcing frequencies or support structure natural frequencies.
- D. All neoprene components shall have a shore hardness of 30 to 50 $\pm 5\%$, after minimum aging of (20) days or equal oven aging.
- E. Substitution of internally isolated and restrained equipment in lieu of the isolation and restraints specified in this Section is acceptable provided all conditions of this Section are met. The equipment manufacturer shall provide a letter of guarantee stating that the specified noise and vibration levels will be obtained and that the seismic restraints shall be in compliance with these specifications. All costs for converting to the specified external vibration isolation and/or restraints shall be borne by the equipment manufacturer/installing contractor should submissions or installations be found to be unacceptable pursuant to the intent of this specifications.
- F. Should any rotating equipment cause excessive noise or vibration, the Contractor shall be responsible for

rebalancing, realignment, or other remedial work required to reduce noise and vibration levels. Excessive is defined as exceeding the manufacturer's specifications for the unit in question.

- G. Upon completion of the work, the Architect or Architect's representative shall inspect the installation and shall inform the Installing Contractor of any further work that must be completed. Make all adjustments as directed by the Architect that result from the final inspection. This work shall be done before vibration isolation systems are accepted.

H. Manufacturer Responsibility

1. Manufacturer of vibration and seismic control equipment shall have the following responsibilities:
 - a. Determine vibration isolation and seismic restraint sizes and locations.
 - b. Provide equipment vibration isolation and seismic restraints as scheduled or specified.
 - c. Guarantee specified isolation system deflections.
 - d. Provide installation instructions, drawings and field supervision to ensure proper installation and performance of systems.
 - e. Provide certification by a licensed engineer that all mounts and restraints meet the project requirements for seismic loading.
2. Substitution of internally isolated mechanical equipment in lieu of the specified isolation of this Section must be approved for individual equipment units and is acceptable only if above acceleration loads are certified in writing by the equipment manufacturer and stamped and sealed by a licensed Civil or Structural Engineer.
3. Licensed Engineers shall be licensed in the project state.

I. Contractor Responsibilities

1. The Contractor performing the work on equipment in the section shall have the following responsibilities.
 - a. Identify the components that are part of the

Quality Assurance Plan.

- 1)
All flammable, combustible and highly toxic piping and their associated mechanical systems.
 - 2)
All ductwork containing hazardous materials.
 - 3)
All equipment using combustible or toxic energy sources.
- b. Identify all Special inspection and Testing.
 - c. List control procedures within the contractor's organization including methods and frequency of reporting and their distribution.
 - d. List personnel and their qualifications exercising control over the seismic aspects of the project.
2. Purchased and/or fabricated equipment must be designed to safely accept external forces of 1.8 g load in any direction for all rigidly supported equipment, piping and ductwork without failure and permanent displacement of the equipment. Resiliently supported equipment, piping and ductwork and Life safety equipment such as fire pumps, smoke exhaust fans, emergency generators and other life safety designated equipment must be capable of accepting external forces of up to 3.6 g in any direction without permanent displacement or failure of the equipment.

1.07 REGULATORY REQUIREMENTS

- A. Conform to ASME B31.9 code for installation of piping system and ASTM F708 for design and installation of pipe hangers.
- B. Welding Materials and Procedures: Conform to ASME (BPV IX) and applicable state labor regulations.
- C. Provide certificate of compliance from authority having jurisdiction, indicating approval of welders.

1.08 DELIVERY, STORAGE AND HANDLING

- A. All vibration control and SEISMIC restraint equipment shall be delivered in containers and shall be kept in a dry and protected area.

- B. All exposed hangers, supports, etc. shall be given 2 coats of rust resistant paint of a color selected by the Architect prior to installation.

PART 2 - PRODUCTS

2.01 ISOLATORS AND RESTRAINTS - GENERAL

- A. Acceptable Manufacturers subject to compliance to specifications.
 - 1. Mason Industries (MI)
 - 2. Amber/Booth (AB)
 - 3. Kinetics Noise Control (KNC)
 - 4. Vibration Eliminator Co. (VEC)
 - 5. Vibration Mountings & Controls (VMC)
- B. The Mechanical Contractor shall provide necessary vibration isolation materials to eliminate excessive noise and vibration from being transmitted from HVAC equipment to the occupied areas of the structure, and to serve as the basis for seismic restraint design for the entire HVAC system within the building. This includes all non-structural components such as, but not limited to, air handlers, fans, pumps, tanks, ductwork, piping, etc. (hereinafter called equipment).
- C. Seismic restraints and vibration isolation types shall be capable of accepting, without failure, seismic forces determined in accordance with:
 - 1. International Building Code 2000
 - 2. State/Country Codes
 - 3. Local codes enforced at the specified project location.
- D. Isolators and supports shall maintain the equipment in a captive position and not short circuit isolation during normal operating conditions. Isolators shall have provisions for bolting and/or welding to the structure.
- E. All metal parts of vibration isolation units installed out-of-doors shall be cold dip galvanized, cadmium plated, or neoprene or PVC coated after fabrication. Galvanizing shall meet ASTM Salt Spray Test Standards and Federal Test Standard #14.

- F. All base supported isolators shall have base plates with bolt holes for fastening the isolators to the support members.
- G. Isolator types are scheduled to establish minimum standards. At the Contractor's option, laborsaving accessories can be an integral part of isolators supplied to provide initial lift of equipment to operating height, hold piping at fixed elevations during installation and initial system filling operations, and similar installation advantages. Accessories must not degrade the vibration isolation system.
- H. Static deflection of isolators shall be as scheduled in this Section and as shown on the drawings. All static deflections stated are the minimum acceptable deflection under actual load. Isolators shall be selected for no less than 50% reserve deflection beyond actual operating conditions.
- I. Attachment plates to be cast into housekeeping pads, concrete inserts, beam clamps, etc. that may be required for seismic compliance shall be provided by this Section.
- J. Coordinate the size, location and special requirements of vibration isolation equipment and systems with other Trades. Coordinate plan dimensions with size of housekeeping pads.

2.02 VIBRATION ISOLATOR TYPES

- A. Type A (Floor Spring and Neoprene)
 - 1. The Type A spring isolator shall:
 - a. Have a minimum outside diameter to overall height of 0.8:1.
 - b. Have corrosion resistance where exposed to corrosive environment with:
 - 1) Springs cadmium plated or electro-galvanized.
 - 2) Hardware cadmium plated.
 - 3) All other metal parts hot dip galvanized.
 - c. Have reserve deflection (from loaded to solid height) of 50% of rated deflection.
 - d. Have minimum 1/4" thick neoprene acoustical base pad on underside, unless designed otherwise.

- e. Be designed and installed so that ends of springs remain parallel.
 - 2. Type A isolator shall be similar to Mason Industries Type SLF.
- B. Type B (Floor Spring and Neoprene Travel Limited)
- 1. The Type B spring isolator shall be the same as Type A with the following additional features.
 - a. Built-in vertical limit stops with minimum 1/4" clearance under normal operation.
 - b. Tapped holes in top plate for bolting to equipment.
 - c. Capable of supporting equipment at fixed elevation during equipment installation. Installed and operating heights shall be identical.
 - d. Adjustable and removable spring pack with separate neoprene isolation pad.
 - 2. Type B isolator shall be similar to Mason Industries Type SLR.
- Note:** This isolator must be bolted or welded to the structure.
- C. Type C (Spring Hanger Rod Isolator)
- 1. Spring isolator (Type A) seated on a steel washer within a neoprene cup incorporating a rod isolation bushing.
 - 2. Spring diameters and hanger box shall allow 30° of hanger rod movement.
 - 3. When used on ductwork, provide eyebolts for attachment to duct straps.
 - 4. Type C isolator shall be similar to Mason Industries Type 30 or W30.
- D. Type G (Pad Type Elastomer Isolator)
- 1. 0.75" minimum thickness, 50 psi maximum loading, ribbed or waffled design.

2. Minimum 0.1" deflection.
3. 1/16" galvanized steel plate between multiple pad layers.
4. Provide load distribution plate where attachment to equipment bearing surface is less than 75% of the pad area.
5. Type G isolators shall be similar to Mason Industries Type Super W.

Note: Bolting required for seismic compliance. Neoprene and duck washers and bushings shall be provided to prevent short circuiting.

E. Type H (Pad Type Elastomer Isolator)

1. Laminated canvas duck and neoprene, maximum loading 1000 psi, minimum 1/2" thick.
2. Provide load distribution plate where attachment to equipment bearing surface is less than 75% of the pad area.
3. Type H isolator shall be similar to Mason Industries Type HL.

Note: Bolting required for seismic compliance. Neoprene and duck washers and bushings shall be provided to prevent short circuiting.

F. Type I (Thrust Restraints)

1. A spring element similar to Type A isolator shall be combined with steel angles, back-up plates, threaded rod, washers and nuts to produce a pair of devices capable of limiting movement of air handling equipment to 1/4".
2. Restraint shall be easily converted in the field from a compression type to tension type.
3. Unit shall be factory precompressed.
4. Thrust restraints shall be installed on all cabinet fan heads, axial or centrifugal fans whose thrust exceeds 10% of unit weight.
5. Type I restraint shall be similar to Mason Industries Type WB.

G. Type J (Steel Rails)

1. Steel members of sufficient strength to prevent equipment flexure during operation.
2. Height saving brackets as required to reduce operating height.
3. Type J isolator shall be similar to Mason Industries Type ICS.

H. Type K (Pipe Anchors and Guides)

1. Acoustical pipe anchor or guide, consisting of a telescopic arrangement of (2) sizes of steel tubing separated by a minimum 1/2" thickness of Type H pad.
2. Vertical restraints shall be provided by a similar material arranged to prevent vertical travel in either direction (anchors only).
3. Allowable loads on isolation materials shall not exceed 500 psi, and the design shall be balanced for equal resistance in any direction.
4. Anchors and guides must be bolted or welded to meet seismic criteria.
5. Type K anchor shall be similar to Mason Industries Type ADA.

2.03 EQUIPMENT BASES

- A. All curbs and roof rails are to be bolted or welded to the building steel or concrete deck to attain acceleration criteria and shall be wind restrained for 110 mph wind loads.

B. Type B-1 (Integral Structural Steel Base)

1. The integral structural steel base shall be reinforced as required to prevent base flexure at equipment start-up and misalignment of driver and driven units. Centrifugal fan bases shall be complete with motor slide rails and shall be drilled for driver and driven units.
2. Height saving brackets shall be provided, as required, to reduce operating height and maintain 1" operating clearance under base.

3. Member depth shall be a minimum of 1/10 of the longest unsupported span.
4. Type B-1 equipment base shall be similar to Mason Industries Type M or WF.

Note: Must be used with Restraint I, II or IV.

C. Type B-6 (Non-Isolated Roof Curb)

1. Non-isolated, curb mounted rooftop equipment shall be mounted on structural curbs that meet the acceleration criteria hereinbefore defined.
2. Curbs shall accept standard 2" roof insulation furnished and installed by the Roofing Contractor.
3. Non-isolated curbs shall be similar to Mason Industries Type RRC.

2.04 FLEXIBLE PIPE CONNECTOR

- A. All flexible connectors shall be installed on the equipment side of the shutoff valves, horizontal and parallel to equipment shafts whenever possible. All piping between the flexible connector and the equipment shall be independently supported off the equipment base.

B. Type FC-1 (Elastomer Connector)

1. Manufactured of nylon tire cord and EPDM, both molded and cured in hydraulic presses. Neoprene used in lieu of EPDM is not acceptable.
2. Straight connectors to have (2) spheres reinforced with a molded in external ductile iron ring between the spheres.
3. Rated at 250 psig/170°F, dropping in a straight line to 170 psig/250°F for sizes 1 1/2" to 12".
4. All sizes shall employ control cables with neoprene end fittings isolated from anchor plates by means of 1/2" bridge bearing neoprene bushings.
5. Connectors shall be installed pre-extended per manufacturer's recommendations to prevent elongation under pressure.
6. Minimum safety factory of 3.6:1 at maximum pressure ratings shall be certified by test reports. Submittals shall also include (2) test reports by independent

consultants showing minimum reduction of 20 dB in vibration accelerations and 10 dB in sound pressure levels at typical blade passage frequencies.

7. Connectors bolted to Victaulic type coupling or gage, butterfly or check valves to have a minimum 5/8" flange spacer installed between the connector and the coupling flange.
8. Connectors for pipe size 2" and smaller shall have threaded female union couplings on each end. Larger pipe sizes shall be fitted with flange couplings.
9. Type FC-1 flexible connector shall be similar to Mason Industries Super-Flex Type MFTNC or MFTFU.

C. Type FC-2 (Flexible Stainless Steel Hose)

1. Stainless steel hose and braid rated with 3:1 safety factor.
2. 2" and smaller with male nipples, 2 1/2" and larger with fixed steel flanges.
3. Lengths as follows:

Siz e		Lengt h	Siz e		Lengt h	Siz e		Lengt h
1/2	x	9	2	x	14	8	x	22
3/4	x	10	2	x	13	10	x	26
			1/2					
1	x	11	3	x	14	12	x	28
1	x	12	4	x	15	14	x	30
1/4								
1	x	13	5	x	19	16	x	32
1/2								
			6	x	20			

4. Type FC-2 flexible connector shall be similar to Mason Industries Type BSS.

D. Type FC-4 (Bronze Braided Flexible Hose)

1. Bronze hose and braid rated with a minimum 3:1 safety factor (minimum 150 psi).
2. Copper tube ends.
3. Minimum lengths (in inches) as follows:

Siz	Lengt	Size	Lengt	Size	Lengt
-----	-------	------	-------	------	-------

e		h			h			h
1/8	x	7 1/2		3/4	x	11 1/2		3 x 27
1/4	x	8 1/4		1	x	13		3 1/2 x 32
3/8	x	9		1 1/4	x	14 3/4		4 x 33
1/2	x	9 3/4		1 1/2	x	17		5 x 41
5/8	x	10		2	x	20		6 x 48
				2 1/2	x	24		

4. Type FC-4 flexible connector shall be similar to Mason Industries Type BFF.

2.05 VIBRATION ISOLATION SCHEDULE

Equipment	HP	Mtn g	On Grade ****				Above Grade			
			Isol	Defl	Base	Rest r	Isol	Defl	Base	Rest r
Centrifugal Fans		Flr Clg	A ---	1.0 ---	B-1 ***	II ---	A** F	See Guide	B-2 ***	I, II III

* Used on vertically arranged units. Rails shall be 1.5 times the unit height.

** Substitute Type B isolator for Outdoor installations.

*** Substitute Type B-2 base for floor mounted Class 2 and 3 fans.

**** "On Grade" shall mean slab on grade only.

***** Fans in all units shall be isolated in accordance with chart.

Notes:

- "Isol", "Base" and "Restr" columns indicate letter type as appears in the specs.
- "Mtng" refers to method of support of equipment from the structure.
- "See Guide" indicates isolator deflection selection to be taken from Deflection Guide below.

Deflection Guide	
RPM	MW Deflection

Deflection Guide	
RPM	MW Deflection
<400	3.5"
<600	2.5"
>600	1.5"

PART 3 - EXECUTION

3.01 GENERAL

- A. Isolation and seismic restraint systems must be installed in strict accordance with the manufacturer's written instructions and submittal data. Vibration isolators shall not cause any change of position of equipment resulting in stress on equipment connections.
- B. Design Criteria
1. All mechanical equipment such as fans, air handling units, etc. shall be isolated from the building structure by means of noise and vibration isolators.
 2. All piping over 1" and ductwork in mechanical equipment rooms and penthouses diameter shall be isolated from the building structure by means of noise and vibration isolation hangers.
 3. Piping and/or ductwork penetrations through floors and walls shall not be rigidly connected to the building structure. Provide sleeves with clearances around the outside, as recommended by the vibration materials manufacturer. All such penetrations shall be smokeproofed and firestopped in an approved manner as hereinbefore specified.
 4. Generally, isolation facilities shall be designed to limit equipment room floor or roof loading to a maximum of 50 lbs./sq.ft. and vibration isolators shall be carefully and specifically selected for each piece of equipment.
 5. Flexible duct connections at fans and air handling units shall have a minimum clear gap of 3" between metal collars. Flexible connectors exposed to the weather shall be weatherproofed by the Mechanical Contractor. Refer to the Sheet Metal Section of this specification for requirements of flexible duct connections.

6. Piping found to have water hammer or other objectionable vibration or noise which cannot be eliminated by proper grading or other natural means shall be braced, trapped, hung with vibration isolation hangers, equipped with air chambers or mechanical shock absorbers, flexible pipe connectors, or otherwise silenced using means as approved by the Architect.
7. Motor driven equipment which is to be isolated shall have motor mounted on the isolated equipment or shall have motor, equipment and drive mounted on a common base.
8. The Contractor shall not install any equipment, piping or conduit which makes rigid contact with the "building" unless permitted in this Specification. Building includes, but is not limited to, slabs, beams, columns, studs and walls.
9. Isolation mounting deflection shall be (minimum) as specified or scheduled on drawings.
10. Coordinate work with other trades to avoid rigid contact with the building. Inform other trades following work, such as plastering or electrical, to avoid any contact which would reduce the vibration isolation.
11. Bring to the Architect's attention, prior to installation, any conflicts with other trades that will result in unavoidable rigid contact with equipment or piping as described herein, due to inadequate space or other unforeseen conditions. Corrective work necessitated by conflicts after installation shall be at the responsible contractor's expense.
12. Bring to the Architect's attention any discrepancies between the specifications and field conditions or changes required due to specific equipment selection, prior to installation. Corrective work necessitated by discrepancies after installation shall be at the contractor's expense.
13. Obtain inspection and approval of any installation to be covered or enclosed, prior to such closure.
14. Correct, at no additional cost, all installations which are deemed defective in workmanship or materials.

3.02 EQUIPMENT ISOLATION INSTALLATION

- A. Equipment shall be isolated and restrained as per the vibration isolation schedule at the end of this Section.
- B. Place floor mounted equipment on 4" high concrete housekeeping pads (unless detailed otherwise) properly doweled or expansion shielded to the deck to meet acceleration criteria. Anchor isolators and/or bases to housekeeping pads. Housekeeping pad concrete work shall be by Division 3. Housekeeping pads shall be sized to have a minimum of 6" of clearance all around the equipment or 12 bolt diameters, whichever is greater.
- C. Additional Requirements
 - 1. The minimum operating clearance under inertia bases shall be 2".
 - 2. The minimum operating clearance under other bases shall be 1".
 - 3. All bases shall be placed in position and supported temporarily by blocks or shims, as appropriate, prior to the installation of the equipment, isolators and restraints.
 - 4. The isolators shall be installed without raising the equipment.
 - 5. After the entire installation is complete, and under full operational load, the isolators shall be adjusted so that the load is transferred from the blocks to the isolators. The blocks shall be barely free and shall be removed. Remove all debris from beneath the equipment and verify that there are not short circuits of the isolation. The equipment shall be free in all directions.
 - 6. Install equipment with flexibility in wiring.

3.03 PIPING AND DUCTWORK ISOLATION INSTALLATION

- A. Isolate piping and ductwork outside shafts connected to rotating or reciprocating equipment and pressure reducing stations.
- B. The isolators shall be installed with the hanger box hung as closely as possible (without direct contact) to the structure.

- C. The isolators shall be suspended from substantial structural members sized for a maximum deflection of $L/360$ at mid span, not from slab diaphragm, unless specifically permitted by the structural engineer.
- D. Hanger rods shall not short circuit the hanger box.
- E. Horizontal suspended water piping 1 1/4" to 2" shall be suspended by Type E isolators with a minimum 3/8" deflection. Water pipe larger than 2" shall be supported by Type F isolators with a minimum 0.75" deflection or same deflection as equipment for the first (3) locations nearest equipment, whichever is greater.
 - 1. Type L isolators may be substituted for the above.
 - 2. Horizontal floor and roof supported pipe shall be the same as above except use isolators Type D and Type A, respectively.
- F. Ductwork shall be supported by Type C isolators with a minimum 0.75" deflection.
- G. Vertical riser pipe supports, where required, under 2" diameter shall utilize Type H isolation.
- H. Vertical riser guides, where required, shall avoid direct contact of piping with the building.
- I. Pipe anchors or guides, where required, shall utilize Type K isolators.
- J. Riser sway supports, where required, shall utilize (2) neoprene elements (Type G or H) to accommodate tension and compression forces.
- K. Install Type FC-1 (FC-4 for refrigerant piping) flexible connectors at all connections of pipe to isolated equipment such as pumps, as shown on the drawings.
- L. Install FC-2, FC-3 or FC-4 type connectors only at locations which exceed temperature or service (such as gas, fuel oil, or refrigerant) limitations of FC-1.

3.04 INSTALLATION INSTRUCTIONS

- A. Adjust all base and piping isolators as required to prevent stress transfer to equipment.

- B. Set steel bases for 1" clearance between housekeeping pad and base. Set concrete inertia bases for 2" clearance. Adjust equipment level.
- C. Position equipment, structural base and concrete base on blocks or wedges at proper operating height.
- D. Provide all equipment and provide operating load conditions before transferring base isolation loads to springs and removing wedges.
- E. Install inertia bases of type and thickness, with isolators of type and static deflection indicated.
- F. Provide isolators as specified and install in accordance with the manufacturer's recommendations. Seismic restraints shall not be installed until isolators are adjusted and equipment height is finalized.
- G. Provide forms for 4" high housekeeping pads under all floor mounted equipment, including those with inertia blocks.
- H. Install equipment with flexibility in wiring connection.
- I. Verify all installed isolators and mounting system permit equipment motion in all directions.
- J. Adjust or provide additional resilient restraints to flexibly limit lateral motion to 1/4" during start-up of equipment.
- K. Before start-up, clean out all foreign matter between bases and equipment to prevent short circuit.
- L. Install flexible pipe connectors on pipe connected to equipment supported by vibration isolation. Hook up piping to equipment and mains with spool pieces. After completion of pressure testing but prior to start-up, remove spool pieces and install flexible pipe connectors. Identify spool pieces as to equipment served and either entering or leaving.

3.05 CERTIFICATION

- A. Upon completion of installation of all vibration isolation devices and seismic restraints, the Mechanical Contractor shall hire an independent Seismic Professional Engineer to visit the site, inspect the completed project and certify in writing to the Architect that all systems are installed properly, or require correction.

END OF SECTION 230548

SECTION 230553 - MECHANICAL IDENTIFICATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 WORK INCLUDED

- A. Furnish and install nameplates, stencils and pipe markers on all Mechanical equipment, piping and ductwork.
- B. Provide nameplates with the unit number and service designation on all mechanical equipment.
- C. Install color coded ceiling tacks in acoustical tile ceilings or color coded tape on ceiling grid to identify location of equipment, and dampers that require regular maintenance or are part of a life safety system (fire dampers).
- D. Provide manufactured pipe and ductwork identification stencils with flow arrows and service indicated. All backgrounds of the stencils shall be color coded with specific service designation
- C. .

1.03 RELATED SECTIONS

- A. Examine all drawings and criteria sheets and all other Sections of the Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this Section.

1.04 REFERENCES

- A. Applicable provisions of the following Codes and Trade Standard Publications shall apply to the work of this Section, and are hereby incorporated into, and made a part of the Contract Documents.
- B. Material standards shall be as specified or detailed hereinafter and as follows:

1. ASME A 13.1 - Scheme for Identification of Piping Systems; The American Society of Mechanical Engineers.

1.05 SUBMITTALS

- A. See Section 230500 and General Conditions for Additional Requirements.
- B. Product Data: Submit product description including materials, attachment methods, color coding and lettering sizes.

1.06 QUALITY ASSURANCE

- A. All materials, lettering and individual system color coding schemes shall be uniform and of one single manufacturer.
- B. No identification shall be installed until all systems are complete and insulated.
- C. All surfaces shall be cleaned.
- D. No nametag or identification shall break or penetrate a surface used as a vapor barrier.

1.07 REGULATORY REQUIREMENTS

- A. Conform to all local/state and NFPA requirements for color-coding or painting of systems, piping or equipment related to Life Safety or Fire Protection.

1.08 DELIVERY, STORAGE AND HANDLING

- A. All identification systems shall be stored in sealed containers in suitable locations to keep the containers and contents dry and clean.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. All surfaces shall be cleaned and dry before applying any form of identification or tagging.
- B. Consult with the manufacturer prior to installation for the proper tagging and identification procedure and materials to be used on exterior outdoor equipment.

PART 2 - PRODUCTS

2.01 GENERAL

A. Acceptable manufactures contingent on compliance with the specification.

1. Seton
2. W. H. Bradey Company
3. Marning Services Incorporated

2.02 PIPE IDENTIFICATION

A. All piping, except that piping which is within inaccessible chases, shall be identified with semi-rigid plastic identification markers equal to Seton Setmark pipe markers.

1. Direction of flow arrows is to be included on each marker.
2. Each marker background shall be appropriately color coded with a clearly printed legend to identify the contents of the pipe in conformance with the "Scheme for the Identification of Piping Systems" (ASME A13.1-1981).
3. Setmark snap-around markers shall be used for overall diameters up to 6"
4. Markers shall be located:
 - a. At each branch maximum.
 - b. At each pipe passage through wall (each side)
 - c.a. At each pipe passage at 20' - 0" intervals maximum.

2.03 DUCTWORK IDENTIFICATION

A. All ductwork (supply, return, exhaust, etc.) serving multiple spaces shall be identified with directional flow arrows and unit identification numbers (AHU-1, EX-1, etc.) on the side of each duct (or bottom if abutting other systems or obstructions).

B. All flow arrows and labels shall be similar to Seton Name Plate Company vinyl labels or stencil painted.

C. All duct access doors.

2.04 EQUIPMENT NAMEPLATES

- A. Equipment nameplates shall be 3" x 6" long, 0.02" aluminum with a black enamel background with engraved natural aluminum letters similar to Seton Style 2065-20. Nameplate shall have pressure sensitive taped backing.
- B. The nameplate shall contain the unit or equipment designation (, "HPRTU" for heat pumpRoof Top Unit, "CPEX" for condensate pumpExhaust Fan, etc.), unit number and area or system served.

2.05 CEILING TACKS OR TAPE

- . Provide steel color coded $\frac{3}{4}$ inch diameter ceiling tacks in acoustical tile ceilings or color coded tape applied to ceiling grid to locate equipment, valves or dampers that require regular maintenance or are part of a Life Safety System.
- . The tacks or tapes shall be color codes as follows:
 - 0. Yellow - HVAC
 - 0. Red - Life Safety (fire dampers, sprinkler valves, etc.)

PART 3 - EXECUTION

3.01 PREPARATION

- A. All surfaces shall be cleaned and insulated (if applicable) prior to installing any identification.
- B. Exterior surfaces of outdoor equipment shall be dry and prepared to accept the specified identification.

3.02 INSTALLATION

- A. Install nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion. Seal with clear lacquer.
- B. Install duct markers in accordance with manufacturer's instructions.
- C. Install plastic pipe markers in accordance with manufacturer's Instructions.

- D. Install plastic tape markers complete around pipe in accordance with manufacturer's instructions.
- E. Identify Heat Pumps with plastic nameplates. Small devices, such as condensate pumps, may be identified with tags.
- F. Identify thermostats relating to air handling equipment serving multiple spaces.
- G.E. Tag automatic controls, instruments and relays. Key to control schematic.
- H.F. Identify piping, concealed or exposed, with pipe markers using plastic tape pipe markers. Use tags on piping $\frac{3}{4}$ inch diameter and smaller. Identify service, flow direction and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, , at each side of penetration of structure or enclosure, and at each obstruction.
- I.G. Identify ductwork with plastic nameplates and flow arrows. Identify with air handling unit or fan identification number and area served. Locate identification at each side of penetration of structure or enclosure, and at each obstruction.

END OF SECTION 230553

SECTION 230593 - TESTING, ADJUSTING AND BALANCING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 WORK INCLUDED

- A. Provide all labor, instruments and materials necessary to completely test, adjust and balance all HVAC systems and equipment installed under this contract.
- B. All instruments shall be newly calibrated for this specific project.

1.03 RELATED SECTIONS

- A. Examine all drawings and criteria sheets and all other Sections of the Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this Section.

1.04 REFERENCES

- A. Applicable provisions of the following Codes and Trade Standard Publications shall apply to the work of this Section, and are hereby incorporated into, and made a part of the Contract Documents.
- B. Material standards shall be as specified or detailed hereinafter and as follows:
 - 1. AABC MN-1 - National Standard for Testing and Balancing Heating, Ventilating and Air Conditioning Systems.
 - 2. ASHRAE 111 - Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning and Refrigeration Systems.

1.05 SYSTEM DESCRIPTION

- A. Provide under this contract the services of an independent test and balance firm that specializes in testing and balancing of HVAC systems. The following services shall be provided:
 - 1. Preconstruction Plan Check and Review: Review the design documents prior to commencing construction.
 - 2. On-going job site inspections of equipment, controls and metering devices during construction to verify conformance with design specifications.
 - 3. Air System Balance
 - 4. Control Systems Verification
 - 5. Special System Testing and Verification
 - a. Duct leakage testing
 - b.a. Sound and vibration testing
 - 6. System Performance Verification
 - 7. Opposite Season Test

1.06 SUBMITTALS

- A. See Section 013323 - Shop drawings and Samples, for submittal procedures.
- B. Submit name of testing, adjusting and balancing contractor for approval within 30 days after award of Contract.
- C. Field Reports: Indicate deficiencies in systems that would prevent proper testing, adjusting and balancing of systems and equipment to achieve specified performance.
 - 1. Prior to commencing work, submit report forms or outlines indicating adjusting, balancing and equipment data required.
 - 2. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for inclusion in operating and maintenance manuals.

3. Provide reports in letter size, 3 ring binder manual, complete with index page and indexing tabs with cover identification at front and side. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets and indicating thermostat locations.
 4. Include detailed procedures, agenda, sample reports forms and copy of AABC National Project Performance Guaranty prior to commencing system balance.
 5. Test Reports: Indicate data on AABC MN-1 forms, forms prepared following ASHRAE 111, NEBB forms, or forms containing information indicated in Schedules.
 6. Include the following on the title page of each report.
 - a. Name of Testing, Adjusting and Balancing Agency.
 - b. Address of Testing, Adjusting and Balancing Agency.
 - c. Telephone number of Testing, Adjusting and Balancing Agency.
 - d. Project name.
 - e. Project location.
 - f. Project Architect.
 - g. Project Engineer.
 - h. Project Contractor.
 - i. Report date.
- D. Project Record Documents: Record actual locations of all water systems balancing valves and rough setting.

1.07 DEFINITIONS

- A. AABC: The Associated Air Balance Council is a non-profit association of independent, certified agencies specializing in testing and balancing HVAC systems.

- B. ASHRAE: American Society of Heating, Refrigerating and Air Conditioning Engineers.
- C. HVAC: Heating, Ventilating and Air Conditioning.
- D. TAB: Testing, Adjusting and Balancing of HVAC Systems to meet design objectives and obtain optimum system performance.
- E. TBE: Test and Balance Engineer is an individual certified by AABC as having a degree in Engineering and (3) years of test and balance experience, or (5) years of background in the air conditioning field and (5) years continuous field experience in testing and balancing work. The TBE must also pass the AABC Test and Balance Engineer Certification Examination.

1.08 AGENCY QUALIFICATIONS

- A. Testing and balancing agency shall be a member of AABC or NEBB with a minimum of five (5) years of documented experience.
- B. An AABC certified NEBB certified testing and balancing person shall be responsible for certification of the total work of this section.
- C. All work shall be performed in accordance with AABC National Standards. If these specifications set forth more stringent requirements than the AABC National Standards, the more stringent specifications shall prevail.

1.09 QUALIFICATION SUBMITTALS

- A. Testing and Balancing Agency shall submit a company resume listing personnel and project experience in the field of air and hydronic system balancing.
- B. Testing and balancing agency shall submit an inventory and calibration data of all instruments and devices in possession of the balancing agency to enable the Owner or his representative to evaluate the balancing agency's performance capability.
- C. The testing and balancing agency shall submit to the Owner or the Owner's representative, upon acceptance of the contract, an AABC or NEBB "Quality Assurance Guaranty."

- D. Within (30) days after acceptance of the contract, the testing and balancing agency shall submit to the Design Engineer a working agenda which will include procedures for testing and balancing each type of air and water flow system. The Test and Balance Report format will also be submitted indicating data to be recorded.

1.10 CONTRACT DOCUMENTS

- A. Within (30) days after selection of the test and balance agency, the Mechanical Contractor Construction Manager shall provide the agency with the following:
 - 1. Construction Drawings
 - 2. Equipment Specifications
 - 3. Equipment Submittals
- B. The testing and balancing agency shall be provided the following as issued or received:
 - 1. Change Orders
 - 2. Equipment Manufacturer's Submittal Data
 - 3. Mechanical/Air Conditioning Shop Drawings
 - 4. Temperature Control Drawings
 - 5. Project Schedule

1.11 NOTIFICATION AND SCHEDULING

- A. A prebalance conference shall be held prior to job start as scheduled by the Owner or Owner's representative. Attendees at the meeting shall include representatives of the test and balance agency, Contractor, Owner and Mechanical Engineer.
- B. The schedule for testing and balancing the HVAC system shall be established by the Owner or Owner's representative, in coordination with the testing and balancing agency on a critical path network.
- C. The testing and balancing agency is responsible for initiating this continuing coordination to determine schedule for final testing and balancing services.

- D. It will be necessary for the testing and balancing agency to perform its services in close coordination with the Contractor, with all scheduling and deficiencies reported through the Owner or Owner's representative.
- E. Before testing and balancing commences, the testing and balancing agency shall receive notification, in writing, from the Contractor that the system is operational, complete, and ready for balancing.
- F. A completed system exceeds physical installation: the Contractor shall certify that heat pump are in good working order, and that full load performance has been preliminary tested.
- G. The Contractor shall certify in writing, that all equipment has been checked, started, adjusted by the manufacturer, and operated for the specified period of time.

1.12 COORDINATION WITH OTHER TRADES

- A. To bring the existing or new HVAC system into a state of readiness for testing, adjusting and balancing, the Contractor shall perform the following:
 - 1. Air Distribution Systems
 - a. Ensure that all splitters, extractors, volume, smoke and fire dampers are properly located and functional. Dampers serving requirements of smoke, minimum and maximum outside, return, relief, and exhaust air shall provide tight closure and full opening, with a smooth and free operation.
 - b. Verify that all supply, return, exhaust, and transfer grilles, registers and diffusers are installed and operational.
 - c. Ensure that split system air conditioners air handling systems, units, heat pumps, makeup air units and associated apparatus, such as heating and cooling coils, filter sections, access doors, etc. are blanked and/or sealed to eliminate excessive bypass or leakage of air.
 - d. Ensure that all fans (supply, return, relief, and exhaust) are operating and free of vibration. All

fans and drives shall be checked for proper fan rotation and belt tension. Overload protection shall be of proper size and rating. A record of motor current and voltage shall be made to verify that the motors do not exceed nameplate rating.

- e. Make any necessary changes to the sheaves, belts, and dampers, as required by the testing and balancing agency, at no additional cost to Owner.
- f. Install clean filters prior to testing.

B. The Contractor shall perform the following:

- 1. Verify that all control components are installed in accordance with project requirements and are functional, including heat pump unit and VAV boxes.
- 2. Verify that all controlling instruments are calibrated and set for design operating conditions.
- 3. Calibrate room thermostats after installation and before the thermostat control verification tests are performed. The test and balance agency shall verify the accuracy of final settings by taking temperature readings. The readings shall be in a typical conditioned space for each separately controlled zone.
- 4. The Contractor shall allow sufficient time in the project to provide assistance and instruction to the testing and balancing agency in the proper use and setting of control components such as, but not limited to, computers, static pressure controllers or any other device that may need setpoints changed so that the testing and balancing work can be performed.

C. The Contractor, and the suppliers of the HVAC equipment, shall all cooperate with the testing and balancing agency to provide all necessary data on the design and proper application of the system components. In addition, they shall furnish all labor and materials required to eliminate any system deficiencies.

D. In coordination with the Contractor, the testing and balancing agency shall arrange for an area of ample size and convenient location for storage of tools, equipment, and other items as required.

PART 2 - PRODUCTS

2.01 GENERAL

- A. The Contractor shall procure the services of an independent Balancing and Testing Contractor who specializes in the balancing and testing of heating, ventilating and air conditioning systems to balance and adjust, all moving equipment and air distribution and exhaust systems and test all water systems and equipment, as herein specified. All work by the Balancing Contractor shall be done under direct supervision of a qualified heating and ventilating Engineer employed by the Balancing Contractor.
- B. Balance and testing shall not begin until all HVAC systems have been completed and are in full working order, as determined by the Engineer. The Balancing Contractor shall coordinate his work with the Contractor, shall place all heating, ventilating and air conditioning systems and equipment into full operation, and continue the operation of same during each working day of adjusting and balancing.
- C. The Balancing Contractor shall perform all tests as hereinafter specified, compile the test data, and submit five (5) copies of the complete test data to the (Owner) for forwarding to the Architect for evaluation and approval.
- D. The Contractor shall award the test and balance contract to the approved agency at the beginning of construction of the project to allow the Balancing Contractor to schedule this work in cooperation with the Contractor and other Trades involved and comply with completion data and requirements, as well as provide a list of areas where special requirements for balancing devices (dampers) might occur.
- E. The Balancing Contractor shall provide all testing instruments used for balancing air. Testing instruments shall have been calibrated within a period of six (6) months prior to balancing. Types, serial numbers and dates of calibration of all instruments shall be listed in the final air balance reports herein specified.
- F. The Architect's, Engineer's and Owner's designated representatives shall be notified minimum five (5) days in

advance of proceeding with balancing work to allow time for the witnessing of the testing, balancing and adjusting.

- G. The Balancing ContractorContractor shall provide all manpower, instruments, temporary connections and all other materials required to accomplish the balancing and testing as hereinafter specified.
- H. In the event it becomes necessary for the Owner to balance the HVAC systems correctly, after the balancing is complete, the cost of this work will be back charged to the Balancing ContractorContractor.

2.02 SCHEMATIC SYSTEM DRAWINGS

A. Ductwork Systems

- 1. The Balancing ContractorContractor shall prepare schematic diagrammatic drawings for the following:
 - a. Shaft Pressurization SystemSupply air systems (all units)
 - . Return air systems (all units)
- 0. The drawings will be 1-line airflow schematics emanating from the air handling equipment, through shafts, to the first major split of duct branches on each floor. The drawings will indicate the air quantities measured at these major branches, pressure drop and any other pertinent information deemed necessary by the Engineer.

D.B. The intent of the required documentation would be to clearly indicate the balancing and performance of the systems as they are installed. Furthermore, the above-required information will be utilized by the Owner for future renovation and/or alterations of the various systems. Therefore, the drawing content and presentation will be submitted to the Engineer for review prior to actual commencement of the work. In the case of phased construction, the schematics shall indicate the limit of each phase and any temporary measures taken to obtain system performance.

E.C. The drawings shall be produced on AutoCAD 2017/10 or newer, and a CD and one (1) set of reproducible drawings shall be submitted to the Owner through the Engineer, for his use.

All costs associated with the production of the documents shall be included under the Balancing Contractor's contract.

. Test Code Drawings

0. Each report shall contain a single line drawing or drawings of the air distribution system with the fan system, applicable zoning, etc., indicated. Each and every outlet supply and return shall be indicated on this drawing by a number corresponding to the number of the outlet test sheet.

2.052.03 TEST FORMS USED BY BALANCING ENGINEERS AND TECHNICIANS
SHALL BE SET UP TO INCLUDE THE FOLLOWING INFORMATION:

- A. Each sheet shall have the job name and address, the name of the Balancing Contractor, Owner, Architect and Engineer, the instruments used to perform the test, and the name of the test Technician, date and time of test, outside db/wb temperatures.
- B. All forms shall be submitted on a standard 8 1/2" by 11" good quality paper, bound together to form a complete report. All forms shall be submitted in typewritten form; handwritten forms are not acceptable. Cover of first sheet shall list the name of the job and the location of same. Copies of all forms shall be submitted to the Architect for review and acceptance prior to the work beginning.
- C. Diffuser, Grille, Register, and All Types of Air Terminal Test Sheets
 1. Each sheet shall be arranged in columns and all final sheets shall show the following data:
 - a. Fan system (EF-E-2 & EF-E-3).
 - b. Room number or area designation.
 - c. Outlet code number which shall correspond to code number.
 - d. Size of outlet - manufacturer's listed data.
 - e. Type of outlet per manufacturer's model designation.

- f. Manufacturer of outlet.
 - g. Manufacturer's effective area for each size.
 - h. Schedule FPM and required CFM of each outlet, individually for heating and cooling.
 - i. Test resultant FPM and CFM of each outlet, individually for heating and cooling.
 - j. Testing, setting and report of CFM settings for each terminal box, including pressure drop at each setting.
- D. Velocity and Pressure Test Sheets for Main and Branch Ducts (Fan System EF-E-2 & EF-E-3)
- 1. Duct location or designation.
 - 2. Duct size.
 - 3. Number of velocity readings.
 - 4. Duct average velocity.
 - 5. Total CFM.
 - 6. Duct average static pressure.

PART 3 - EXECUTION

3.01 AIR SYSTEM BALANCING AND TESTING PROCEDURES

- A. The Balancing Contractor shall perform the following tests, and balance all systems in accordance with the following requirements after clean filters are installed in all filter banks before tests are performed:
- A.
 - 2.1. Test and adjust to achieve design requirements.
 - a. Test and report system static pressure.
 - b. Test and record entering and leaving air temperatures (db-wb cooling and db heating).

- c. Adjust all main supply, and return air ducts to proper design CFM.
- d. Adjust all zones and branches to proper design CFM, supply and systems.
- e. Test and adjust each diffuser, grille, register, and constant volume box to within $\pm 5\%$ of design requirements.
- f. Identify and list size, type and manufacturer of diffusers, grilles, registers, and terminal volume boxes.
- g. Measure air quantities in main and branch ducts by traversing entire cross sectional area of duct with pitot tube. Ducts having velocities of 1000 feet per minute or more shall be measured with inclined manometers (draft gauge) or magnehelic gauges; ducts having velocities of less than 1000 per feet per minute shall be measured with micromanometers, hook gauges, or similar low pressure instruments. Openings in ducts for pitot tube insertion shall be sealed with snap-in plugs and covered with duct tape after air balance is complete. Diffuser, grille and register air quantities shall be determined by direct reading velocity meters in accordance with the manufacturer's recommendations.
- h. Branch duct air quantities shall be adjusted by volume dampers. Dampers shall be permanently marked after air balance is complete to enable them to be restored to their correct position if disturbed at any time.
- i. Any dampers required for final balancing, as determined by the Balancing Contractor and the Engineer, will be provided by the Contractor to ensure proper performance, at no extra cost to the Owner.

3.02 CONTROL SYSTEMS VERIFICATION

- A. Verify all control devices are properly connected.

- B. Check the location of all thermostats for potential erratic operation from outside influences such as sunlight, drafts or cold walls.
- C. Check the sequence of operation that any control mode is in accordance with approved shop drawings.
- D. Verify all controller setpoints meet the design intent.
- E. Verify the operation of all interlock systems.
- F. Perform all systems verification to ensure the safety of the system and its components.

3.04 SPECIAL SYSTEMS TESTING

. Duct Leakage Testing

- 0. Testing shall be conducted before external insulation is applied and before ducts are connected.
- 0. Mechanical Contractor to close off and seal all openings in the duct section to be tested.
- 0. Each section shall be tested by the Mechanical Contractor in accordance to the leakage class as specified under Section 15890 and SMACNA Standards. All tests shall be witnessed and documented by the TAB Contractor.

3.093.03 SYSTEM PERFORMANCE VERIFICATION

- A. At the time of final inspection, the test and balance agency shall recheck, in the presence of the Owner's representative, specific and random selections of data, air quantities, and air motion recorded in the Certified Report.
- B. Points and areas for recheck shall be selected by the Owner's representative.
- C. Measurement and test procedures shall be the same as approved for work forming basis of Certified Report.

- D. Selections for recheck, specific plus random, will not normally exceed 25% of the total number tabulated in the report.
- E. If random tests elicit a measured flow deviation of 10% or more from that recorded in the Certified Report listings, by 10% or more of the selected recheck stations, the report is rejected, all systems shall be readjusted and tested, new data recorded, new Certified Report submitted, and new inspection tests made, all at no additional cost to Owner.
- F. Following system verification of the Certified Report by the Owner's representative, the settings of all dampers, and other adjustment devices shall be permanently marked by the testing and balancing agency so that adjustment can be restored if disturbed at any time. Devices shall not be marked until after system verification.
- G. any modifications to the initial adjustments to produce optimum system operation.

3.103.04 RECORD AND REPORT DATA

- A. The test and balance report shall be complete with logs, data and records as required herein. All logs, data and records shall be typed on white bond paper and bound. The report shall be certified accurate and complete by the testing and balancing agency's certified balancing engineer.
- B. Six (6) copies of the test and balance report are required and shall be submitted to the Owner or the Owner's representative.
- C. The report shall contain the following general data in a format selected by the testing and balancing agency.
 - 1. Project number.
 - 2. Contract number.
 - 3. Project title.
 - 4. Project location.
 - 5. Project architect.
 - 6. Project mechanical engineer.

7. Test and balance agency.
8. Balancing Engineer.
9. Contractor.
10. Date tests were performed.
11. Certification.

D. The test and balance report shall be recorded on report forms conforming to the recommended forms in AABC National Standards. At a minimum, the report shall include:

1. Preface: A general discussion of the system, any abnormalities and problems encountered.
2. Instrumentation List: The list of instruments including type, model, manufacturer, serial number, and calibration dates.
3. System Identification: In each report the supply and return openings and traverse points shall be numbered and/or lettered to correspond to the numbers and letters used on the report data sheets.

END OF SECTION 230593

SECTION 230719 - HVAC PIPING INSULATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 WORK INCLUDED

- A. Furnish and install all piping insulation, vapor barriers, jackets, finishes, adhesives, cements and accessories to make a complete insulated system for all piping, valves, fittings, joints, offsets and flanges specified herein.
- B. All insulation system materials shall conform to the maximum flame spread/smoke developed ratings specified herein.
- C. Hard insulation material shall be provided at all hangers.
- D. Insulate the following:
 - 1. All scheduled piping, all valves, fittings, elbows, flanges and accessories.
 - 2. All piping exposed to weather including provision of additional weatherproof jacket.
 - 3. All vents and blow-offs in mechanical rooms and elsewhere within reach of personnel.
 - 4.3. Piping jacket covers.
 - 5.4. All heat traced piping.

1.03 RELATED SECTIONS

- A. Examine all drawings and criteria sheets and all other Section of the Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this Section.

1.04 REFERENCES

- A. Applicable provisions of the following Codes and Trade Standard Publications shall apply to the work of this

Section, and are hereby incorporated into, and made a part of the Contract Documents.

- B. Material standards shall be as specified or detailed hereinafter and as follows:
1. ASTM A 666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar.
 2. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Steel and Plate.
 3. ASTM B 209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and plate (Metric).
 - 4.3. ASTM C 177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded Hot Plate Apparatus.
 - 5.4. ASTM C 195 - Standard Specification for Mineral Fiber Thermal Insulating Cement.
 6. ASTM C 240 - Standard Test Methods of Testing Cellular Glass Insulation Block.
 7. ASTM C 449/C 449M - Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement.
 - 8.5. ASTM C 518 - Standard Test method for Steady-State Heat Flux Measurements and Thermal Insulating and Finishing Cement.
 9. ASTM C 533 - Standard Specification for Calcium Silicate Block and Pipe Terminal Insulation.
 - 10.6. ASTM C 534 - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form.
 11. ASTM C 547 - Standard Specification for Mineral Fiber Pipe Insulation.
 12. ASTM C 552 - Standard Specification for Cellular Glass Thermal Insulation.
 13. ASTM C 578 - Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation.

14. ~~ASTM C 51 - Standard Specification for Unfaced Rigid Cellular Polyisocyanurate Thermal Insulation.~~
Insulation for Use in Contact with Austenitic Stainless Steel.
15. ASTM C 610 - Standard Specification for Molded Expanded Perlite Block and Pipe Thermal Insulation.
- 16.7. ASTM C 795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel.
- 17.8. ASTM C 921 - Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation.
- 18.9. ASTM D 1056 - Standard Specification for Flexible Cellular Materials - Sponge ore Expanded Rubber.
- 19.10. ASTM D 1667 - Standard Specification for Flexible Cellular Materials - vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).
20. ~~ASTM D 1667 - Standard Specification for Flexible Cellular Materials - vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).~~
ASTM D 1667 - Standard Specification for Flexible Cellular Materials - vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).
21. ASTM D 2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics.
- 22.11. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- 23.12. ASTM E 96 - Standard Test Methods for Water Vapor Transmission Materials.
- 24.13. NFPA 225 - Standard Method of Test of Surface Burning Characteristics of Building Materials.
- 25.14. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials.
- 26.15. ANSI/ASHRAE 90.1 - Energy Conservation in New Buildings.

1.05 SUBMITTALS

- A. See Section 230500 and General Conditions for Additional Requirements.

- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.
- C. Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.
- D. Installation Graphic Details.

1.06 QUALITY ASSURANCE

- A. All insulation materials, finishes, coatings, cements, jackets and other insulation accessories shall have minimum composite or individual fire hazard ratings as well as thickness and "C" values conforming to State Building Codes which control building construction materials that may be used on this project. Where specification requirements exceed the Code requirements, the specification shall govern.
- B. Piping insulation for the various piping systems and associated equipment shall be composed of materials which are non-combustible and/or provide a fire resistive system of insulation which complies with the applicable Code having jurisdiction. Generally, it is required that fire hazard ratings shall not exceed the following, except as noted:
 - 1. Flame Spread Rating 25 (No Exceptions)
 - 2. Smoke Developed Rating: 50
- C. All fire hazard ratings shall be as determined by NFPA 255 "Method of Test of Surface Burning Characteristics of Building Materials", ASTM E84 or UL 723.
- D. All insulation materials herein specified shall be used subject to the manufacturer's temperature limitations and their compatibility with other materials.
- E. Installation of all insulation work shall be executed by a qualified Insulation Contractor who is thoroughly experienced in this particular type of work and who has adequate facilities and equipment for installation of all insulation work herein specified and who is familiar with the requirements of the Code enforcing Authorities as to fire hazard rating.

- F. The finished installation shall present a neat and workmanlike appearance with all jackets smooth, with all vapor barriers sealed and intact.
- G. Where insulation is specified for piping, insulate similarly all connections, vents, drains and any piping connected to system subject to heat loss or gain. Do not cover vent petcocks, cleanouts or other maintenance points on equipment unless identified on the insulation with removable access panels or covers.
- H. All chilled water system piping, components and accessories are to be insulated in a manner so as to provide a complete, uninterrupted vapor barrier.

1.07 REGULATORY REQUIREMENTS

- A. Conform to maximum flame spread/smoke developed rating of 25/50 in accordance with ASTM E 84, NFPA 255, or UL 723.

1.08 DELIVERY, STORAGE AND PROTECTION

- A. Accept materials on site, labeled with manufacturer's identification, product density and thickness.
- B. All materials shall be stored in a dry area free from moisture and debris.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Maintain ambient conditions required by manufacturers of each product.
- B. Maintain temperature before, during and after installation for minimum of 24 hours.

PART 2 - PRODUCTS

2.01 MANUFACTURERS ACCEPTABLE FOR PRODUCT TYPES INDICATED CONTINGENT UPON PRODUCTS' COMPLIANCE WITH THE SPECIFICATIONS

- A. Insulation:
 - 1. Manville Corporation.
 - 2. Owens-Corning Fiberglass Corporation.
 - 3. Armstrong World Industries, Incorporated.

4. Certainteed Corporation.
 5. Knauf
- B. Mastics and adhesives:
1. Childers Products Company.
 2. H. B. Fuller Company, Foster Products Division.
 3. 3M Company Adhesives, Coatings and Sealers.
 4. Armstrong World Industries, Incorporated.
 5. Ruston Plant.
 6. Chicago-Mastic
 7. Insul-Cooustic
 8. St. Clair Rubber
 9. Vimasco
 10. Baldwin-Ehret-Hill
- C. Pipe insulation of hanger and support:
1. Pipe Shields, Inc.
 2. Rilco Manufacturing Company.
 3. Elcen Metal Products Company.
 4. Power Piping Company.
 5. NPS Industries.
- D. PVC fitting covers:
1. Manville, Corporation.
 2. Ceel-Co.
 3. Certainteed, Corp.
 4. Cell Co. Plastics

2.02 GENERAL

- A. Adhesives and insulation materials: Composite fire and smoke hazard ratings maximum 25 for flame spread and 50 for smoke developed for pipe insulation. Adhesives to be waterproof when cured.
- B. The installation of thermal insulating materials coverings and coatings containing asbestos fibers is forbidden.
- C. Insulation shall not be chemically reactive to the metal over which it is applied. Insulation installed on steel shall be neutral or slightly alkaline. Insulation installed on aluminum shall be neutral or slightly acidic.

2.03 MATERIALS AND COMPONENTS

- A. Fiberglass insulation:
 - 1. Premolded pipe fiberglass: Recommended temperature to 850 degrees Fahrenheit with facing. Molded in one piece split or hinged circular sections in three-foot lengths for piping and tubing. Insulation shall be made from long, fine, glass fibers bonded together with a thermosetting resin. Insulation shall have a minimum density of 4.0 pounds per cubic foot and a K value as follows:

Fluid Temperature Range, Degree F	K-Value btu in/(Hr sq.ft. degree F)	Mean Rating Temperature, Degree F
Greater than 350	0.32-0.34	250
251-350	0.29-0.32	200
201-250	0.27-0.30	150
141-200	0.25-0.29	125
105-140	0.21-0.28	100
40-60	0.21-0.27	75
Below 40	0.20-0.26	50

Insulation furnished with facing as specified below and as indicated in insulation schedule. Insulation similar to Owens-Corning Type SSL-II. Pressure sensitive tapes using rubber based or acrylic based adhesives are not permitted.

- 2. Pipe and tank fiberglass: Recommended temperature to 450 degrees F with facing. Insulation shall be made from long, fine, glass fibers bonded together with a thermosetting resin. Insulation shall have a minimum density of 3 pounds per cubic foot and a k-value as per table for Pre-molded pipe fiberglass above.

Insulation furnished with facing as specified below and as indicated in insulation schedule. Insulation similar to Manville pipe and tank insulation. Pressure sensitive tapes using rubber based or acrylic based adhesives are not permitted.

3. Flexible fiberglass: Recommended temperature to 250 degrees Fahrenheit. Glass fibrous flexible blanket insulation having density of 0.75 pounds per cubic foot and a k-value as per table for Pre-molded pipe fiberglass above. Insulation furnished with facing as specified below and indicated in insulation schedule. Insulation and jacket similar to Owens-Corning Type SSL-II.

Use pipe and tank fiberglass only when premolded pipe fiberglass is not available. Pipe and tank insulation shall not be used on pipe sizes 24 inches and smaller.

- A. Fiber Free Elastomeric Foam: closed-cell material having a thermal conductivity of 0.25 at 75°F mean temperature.

4.

- B. Equipment insulation:

1. Rigid fiberglass: Recommended temperature to 450 degrees F. Fiberglass rigid board having a density of 3.0 pounds per cubic foot and a K value of 0.23 at 75 degrees F mean temperature. See schedule for facing type.
2. Flexible fiberglass: Recommended temperature to 250 degrees F with facing. Glass fibrous flexible blanket insulation having a density of 0.75 pounds per cubic foot and a K value of 0.30 at 75 degrees F mean temperature.
3. Rigid fiberglass high temperature: Recommended temperature to 850 degrees Fahrenheit. Fiberglass high temperature board having a density of 3 pounds per cubic foot and a K value of 0.30 at 200 degrees Fahrenheit mean temperature.

- C. Insulation facing:

1. Code ASJ: All service jacket composed of high intensity white chemically treated Kraft paper reinforced with fiberglass yarn and mesh and laminated to aluminum foil with a fire retardant adhesive.

Longitudinal laps and butt strips shall be a minimum of 3 inches.

2. Code FSKL: 0.35 mil aluminum foil reinforced with fiberglass yarn reinforcing scrim and laminated to chemically treated fire resistive Kraft paper having a minimum 35 pound per inch width tensile strength when tested in accordance with ASTM D 828. Water vapor permeability 0.04 perms. Longitudinal laps and butt strips shall be a minimum of 3 inches.

D.B. Additional insulation jacket:

1. ADJ-1: Approximately 6 ounce per square yard glass cloth jacket with thread count of 5 strands per square inch.
2. ADJ-2: Approximately 2 ounce per square yard glass cloth jacket with a thread count of 10 strands by 10 strands per square inch. Jacket shall be used for covering pipe and pipe fittings.
3. ADJ-3a: 0.016 inch thick aluminum jacket conforming to ASTM B-209 with a 1 mil factory applied polykraft moisture barrier. Longitudinal joints shall be placed at the side of the pipe facing downward at either the 4 o'clock or 8 o'clock position so as to shed water. Aluminum fitting covers, two piece elbows, tees, valve and flange covers, etc., with a 1 mil polykraft or acrylic vapor barrier.
4. ADJ-3b: 0.020 inch thick aluminum jacket conforming to ASTM B-209 with a 3 mil factory applied polykraft moisture barrier. Longitudinal joints shall be placed at the side of the pipe facing downward at either the 4 o'clock or 8 o'clock position so as to shed water. Aluminum fitting covers, two piece elbows, tees, valve and flange covers, etc., with a 3 mil polykraft or acrylic vapor barrier.
5. ADJ-4: 20 mil PVC jacket suitable for all types of paint. Similar to Manville Zeston 25/50.
6. ADJ-5: shall be a Cell-Co plastic jacket with the following color coded pattern:
 - a. Condensate (Pump/Gravity): White
 - b. Other Yellow-green
- 7.1. ADJ-6 A finish jacket of an Asbestos-free and woven as high temperature, heat-resistant fabric. Lagging Cloth

having a treated weight of 24 oz./sq.yd. Material shall be suitable for a sustained operation at 1100°F. Calcium silicate piping for generator exhaust piping shall also be jacketed with corrugated aluminum. ADJ-4: 20 mil PVC jacket with UV inhibitor suitable for all types of paint. Similar to Manville Zeston 25/50.

8. ADJ-7: 0.16-inch thick type T-316 stainless steel jacket. Alloys conforming to ASTM A-240. System shall have a 3-mil polykraft vapor barrier.

E.C. Adhesives:

1. Code ADH-1: Fibrous adhesive, non-flammable, quick setting adhesive for calcium silicate. Similar to Childers CP-97, 98.
2. Code ADH-2: Fast-drying vinyl base coating and lagging adhesive. Similar to Childers CP-50A HV2.
3. Code ADH-3: Fast-drying neoprene base adhesive for lap joints of foil-faced facing applied over pipe insulation. Similar to Childers CP-82.
4. Code ADH-4: Adhesive for use in adhering fiberglass board or blanket insulation to pipe and equipment. 3M Company Insulation Adhesive No. 35 or 38 non-flammable adhesive.

F.D. Caulking components:

1. Code CC-1: For use with foam glass and/or joint sealant applications. Flexible elastomeric vapor barrier sealant. Similar to Childers CP-76.

G.E. Mastics:

1. Code MAS-1: Vapor barrier mastic made with an elastomeric resin. For indoor use. Similar to Childers CP-30.
2. Code MAS-2: A non-water vapor barrier asphaltic emulsion coating, breathing type, for above ground installations. Similar to Childers CP-10.
3. Code MAS-3: Vapor barrier mastic made with an elastomeric resin. For outdoor use.

H.F. Tie wire:

1. Tie wire for securing insulation in place shall be type 304 stainless steel annealed steel wire of gauge and proper spacing as recommended by the insulation manufacturer. Wire shall be drawn up tightly enough to become embedded in the insulation and the ends of the loop twisted, bent over, and pressed into the insulation so as to leave no ends protruding.

I.G. Banding:

1. 3/8 inch 3/8-inch x 0.02 inch type 304 stainless steel for pipe insulation.
2. 3/4 inch 3/4-inch x 0.02 inch type 304 stainless steel for additional insulation jackets.

J.H. Wire mesh:

1. Wire mesh shall be one inch by No. 20 BGW hexagonal mesh galvanized.
2. Expanded metal: Expanded metal shall be 1/2 inch Hi-Rib metal lath of copper bearing steel.

K.I. Tape:

1. Lead foil tape shall be 3M Company Lead Foil Tape No. 422, 4 mil thick, acrylic adhesive, 2 inch wide.
2. Vinyl plastic tape, silver gray, flame resistant, vapor barrier sealant tape on rigid and flexible insulation material for warm or cold air ducts. Similar to 3M Company Duct Sealing Tape No. 474.
3. Aluminum foil tape, dead soft aluminum foil, point seal on stick pin, metal patching, moisture barrier, heat reflecting and general sealing on aluminum facing foil. Similar to 3M Company Aluminum Foil Tape No. 425.

L.J. Staples:

1. Staples shall be galvanized clad outward clinching insulation staples.

M. Insulating cement:

1. Insulating cement shall be a mineral-fiber (wool) ASTM C 195 base material having essentially the same insulating characteristics as the adjacent insulation. Similar to PABCO High Temperature Insulating Cement.

Insulating cement shall be applied in layers to a maximum thickness of 1/2 inch at one time. Each layer shall be allowed to dry thoroughly before subsequent layers are applied.

N. Finishing cement:

1. Finishing cement ASTM C 449 shall be diatomaceous silica thermal insulating materials with a suitable proportion of heat resistant binder, hydraulic setting insulating cement capable of withstanding maximum temperature of 700 degrees Fahrenheit. When mixed with water it shall be a plastic mix suitable for trowel applications and shall present a hard, smooth and durable surface after drying. Similar to PABCO No. 127.

O. Combination insulating and finishing cement:

1. Similar to Ryder One Coat or equal.

P. Welding studs:

1. Welding studs shall be capacitor type split pin or TCP tipped insulation pins with speed clips. Similar to Nelson Stud Welding Spec. 28.

PART 3 - EXECUTION

3.01 PREPARATION

- A. No insulation shall be applied until the surfaces of the equipment to be insulated are thoroughly cleaned and until pipes and equipment to be insulated have been leak tested and proven tight and accepted by THE ENGINEER
- B. Insulation shall not be applied to piping or equipment until authorization is given to the Contractor by the Engineer. Contractor shall submit a request for authorization. If any insulation is applied without first obtaining authorization, it will be the Contractor's responsibility to remove the insulation and apply it again if so directed.
- C. Ensure surface is clean and dry prior to installation. Ensure insulation is dry before and during application. Finish with systems at operating conditions.

- D. The execution of the insulation work shall be in strict accordance with the best practices of the trade and with the specifications.
- E. The insulation shall be handled and applied in a manner that will not adversely affect its structural or insulating properties.
- F. The installation instructions provided by the insulation material manufacturer of all materials specified in this Section shall be followed when installing these materials. Where the specifications are in conflict with manufacturers' instructions, such conflicts shall be brought to the attention of the ENGINEER for a decision.
- G. Welding operations will not be permitted on certain specific items of equipment, piping and components for the application of studs, pins, support rings, angles, etc. Contractor shall obtain permission in writing from THE ENGINEER to perform any welding.
- H. Coat to seal all insulating cement and calcium silicate surfaces with primer similar to Childers CP-53 or equal before applying any mastic coating.

3.02 PIPING INSULATION INSTALLATION

- A. Ensure insulation is continuous through interior walls. Pack around pipes with fire proof self-supporting insulation material, fully sealed. Insulation on all cold surfaces where vapor barrier jackets are specified must be applied with a continuous, unbroken vapor seal. Hangers, supports, anchors, and other heat conductive parts that are secured directly to cold surfaces must be adequately insulated and vapor sealed to prevent condensation.
- B. Insulate fittings, valves, unions, flanges, and strainers. Do not insulate flexible connections and expansion joints. Terminate insulation neatly with PVC or aluminum end caps.
- C. Premolded fiberglass insulation for straight pipes shall be applied, neatly fitted around piping and sealed with adhesive ADH-3. Adhesive shall be applied to only one side of each joint and shall not be applied to the pipe surface.
- D.C. Where two sections of pipe insulation butt together provide a 3 inch wide3-inch-wide butt strip of same facing material as adjacent insulation facing. Adhere neatly in place using adhesive ADH-3.

- E.D. All pipe elbows shall be insulated with short radial and mitered pieces of board or block insulation or premolded pieces of pipe insulation. Each piece shall be butted tightly against the adjoining piece and all joints, seams, voids and irregular surfaces shall be filled with insulating cement finished to a smooth, hard and uniform contour. Coat with MAS-1 mastic and reinforce with ADJ-2 additional jacket. In addition, place a fitted PVC cover (ADJ-4) over insulated elbow exception. Tape elbow to adjoining insulation.
- F.E. All valves and fittings shall be insulated with premolded fittings, sectional pipe insulation, or blocks of the same material and thickness as used for the adjacent pipe. Flange insulation shall overlap the adjoining pipe insulation by not less than the thickness of the pipe insulation. Sectional pipe covering or block insulation shall be cut to fit, and each section butted closely to the next and held in place with tie wire.
- G.F. Fittings on pipe lines in finished and concealed areas shall be covered with premolded fiberglass pipe fitting insulators Insul-Coustic or equal, where sizes are available, otherwise, use mitercut segments of molded pipe insulation, wire in place with joints and raw edges sealed with adhesive and smoothed out with a coat of insulating cement.
- H.G. On cold pipes the fittings shall be finished with (2) coats of an approved vapor barrier mastic, reinforced with glass cloth extending 2 inches onto adjacent pipe insulation. Hot pipes shall be finished in a similar manner except the mastic need not be of the vapor barrier type.
- I.H. Insulation shall cover the entire surface of the fittings and bodies of the valves up to and including the bonnets, and to the valve stuffing box studs, bolts, or nuts. All joints, seams, and irregular surfaces shall be filled with insulating cement. The insulated surfaces shall be covered with a 1/4 inch thick layer of finishing cement and heavily coated with vapor barrier mastic MAS-1 for cold services and mastic MAS-2 for hot services and reinforced with ADJ-2 additional jacket. Mastic shall be trowelled to a smooth and well-shaped contour compatible with adjoining pipe insulation jackets as specified.
- J.I. Use ADJ-4 covers over fittings and flanges everywhere except when ADJ-3a, ADJ-3b, or ADJ-5 is specified.

- K.J. Repair separation of joints or cracking of insulation due to thermal movement or poor workmanship on all joints of all piping.
- L.K. All instrument connections for thermometers, thermocouples, gauges, test connections, flow meters, etc., on insulated pipes, vessels, or equipment shall be insulated. The insulation shall be shaped at these connections by tapering it to and around the connection with insulating cement and finishing with finishing cement, vapor barrier adhesive, applicable mastic, or caulking compound.
- M.L. Where removable flange and valve insulation is required or specified, installation shall conform to the following:
1. Removable flange insulation shall be made from sectional pipe insulation of the same thickness as that on the adjoining pipe or from block insulation 1/2 inch thinner than the pipe insulation and finished with insulating cement. Insulation jackets shall be the same as adjoining pipe insulation unless indicated otherwise.
 2. When flange covers are made from sectional pipe insulation, they shall enclose the flanges and be long enough to extend at least 2 inches over the adjacent pipe insulation on each side of the flange. The space between the flange cover and the pipe insulation shall be filled with insulating cement. Secure the flange cover in place with stainless steel banding.
 3. When flange covers are made from block insulation, they shall be made in two halves. Each half shall consist of mitered blocks wired to 1/2 inch galvanized hardware cloth mesh. This wire frame, with its attached insulation, shall then be secured to the flanges with tie wire. The insulation cover shall be long enough to extend at least 2 inches over the adjacent pipe insulation on each side of the flange. The space between the flange cover and the pipe insulation shall be filled with insulating cement. The whole flange cover assembly shall be finished with 1/2 inch of insulating cement applied in two coats. After the first coat is dry, the second coat shall be trowelled to a smooth hard finish. All surfaces shall then be finished with jackets as specified in the schedule.
 4. Removable valve insulation covers shall be constructed in the same manner as for flanges with the following exception; the two part section shall be divided on

the vertical center line of the valve body, bonnet, flange or joint.

5. When specified to insulate the complete valve, the hand wheel or lug wrench shall be removed to accommodate the valve bonnet box. The valve bonnet box shall be constructed in a one piece one-piece closure, one end closed, one end opened to fit up to the valve body insulation. Securing the valve and bonnet box sections, sealing and pointing of the insulation shall be done in same manner as specified for flange covers.
6. Unless indicated as removable, a permanent installation as previously specified shall be used.
7. Protect insulation on piping 2 ½" and up, where supported in hangers by means of calcium silicate rigid pipe insulation or jackets. Saddles or shaped galvanized steel pieces approximately 10" long by half the circumferences of insulated pipe.
8. All piping shall have been tested and approved prior to installation of insulation.
9. All piping or surfaces where subject to condensation on the outside shall be insulated including vapor seal finish.

PART 4 - SCHEDULES

4.01 PIPING INSULATION SCHEDULE: (ASJ = "All-Service-Jacket")

- A. For the purpose of the following table, following are considered to be the pressure and temperature ranges:

1. Refrigerant Hot Gas - 141 - 200 Deg. F
2. Refrigeration Liquid Line, Condensation Drains - 40-60 Deg. F
3. Refrigeration Suction Line- 34- 60 Deg. F

Service	Type Insulation and Thickness (Inches)	Facing	Additional Jacket*	Thicknesse s (inch.)
Refrigerant Hot Gas Up to 4" 4" & Up (Indoor)	Molded Fiber Glass 2 1/2 3Flexible Elastomeric	ASJ ASJ		1.5

Service	Type Insulation and Thickness (Inches)	Facing	Additional Jacket*	Thicknesses (inch.)
Condenser Water Up to 1-1/4" 1-1/2" & Up	Molded Fiber Glass 1 1-1/2	ASJ ASJ ASJ		
Chilled Water Up to 1-1/4" 1-1/2" & Up	Molded Fiber Glass 1 1-1/2	ASJ ASJ		
Refrigerant Suction Line, Liquid Line (Indoor) Condensation Drains Up to 1-1/4" 1-1/2" & Up (Indoor)	Flexible ElastomericMolded Fiber Glass 1 1-1/2	ASJ ASJ	ADJ-4	1.0
Condensation Drains Refrigerant Suction Line (Indoor)	Flexible ElastomericMolded Fiber Glass 3"	ASJ	ADJ-3b	1.0
Refrigerant liquid and suction line (Outdoor)	Flexible Elastomeric		ADJ-4	1.5
All outdoor piping	Two times thickness scheduled except heat traced		ADJ-3b	
All pipe within equipment room with chillers or boilers plant	As scheduled		ADJ-5	
Others not scheduled	Molded Fiber Glass 2	ASJ		

*Including elbows, fittings, valves, complete system.

1. Refer to jacket specifications for finish covering to be installed on calcium silicate insulation in finished areas. PVC jacket with UV inhibitor for outdoor refrigerant piping insulation.
2. Where "Finishing Cement" finishes are scheduled, refer to specifications for Cement herein for materials, method of application, thickness, etc.
- 3.2. Provide vapor barrier on all cold water and rainwater piping.
- 4.3. Piping exposed to weather shall be insulated with pipe insulation using double the thicknesses scheduled hereinbefore, up to 24 inches beyond the point where pipes enter the building. Provide weatherproof jacket as hereinafter specified.

5. Equipment drains and floor drains from cooling coils as well as drinking fountain waste shall be insulated 6 feet downstream from connection point.

END OF SECTION 230719

SECTION 230900- DIRECT DIGITAL/AUTOMATIC TEMPERATURE CONTROLS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 WORK INCLUDED

- A. Furnish and install a complete system of automatic temperature controls to make a fully operational and controllable building HVAC system.
- B. The system shall be all electric DDC (direct digital control).
- C.A. All system components shall be installed in accordance with local and State codes.
- D.B. Secure all permits and local/State approval for all components and installation as specified under this Section.
- E.C. Provide complete commissioning for all control system components and sequences of operation.
- . Preparation and submission of shop drawings.

1.041.03 RELATED SECTIONS

- A. Examine all drawings and criteria sheets and all other Sections of the Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this Section.

Division 23Section 23 09 93 - Sequence of Operations

- B. Section 23 81 26 -Split System Air Conditioners

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- . Division 26

1.071.04 REFERENCES

- A. Applicable provisions of the following Codes and Trade Standard Publications shall apply to the work of this Section, and are hereby incorporated into, and made a part of the Contract Documents.
- B. Material standards shall be as specified or detailed hereinafter and as follows:
 - 1. NFPA 70 - National Electric Code.
 - 2. UL-916 - Energy Management Systems.
 - 3. UL-873 - Temperature Indication and Regulating Equipment.
 - 4. FCC; Part 15, Subpart J - Class A computing Equipment.
 - 5. UL-864 - Fire and Smoke Control.

1.081.05 SYSTEM DESCRIPTION

- A. Furnish and install, as hereinafter specified, a combination direct digital/ electric/electronic temperature control Building Management System (BMS) system and Building Automation System (BAS). The system shall be fully integrated with the existing Building Management System of the serving rest of the systems in the building.
- B. The contractor shall engage the services of the existing BMS system manufacturer/service provider serving the building for procurement, installation, wiring, logics and programming of the systems installed in this project for seamless integration with the existing BMS system. All system controls shall be in full compliance with the requirements of the existing BMS system vendor.
- C. The contractor shall provide all required BMS system components in the equipment installed in the project either factory installed or field installed with the full written concurrence of the project equipment manufacturer for equipment installation, operation and warranty sustenance.
- A.D. The system shall be comprised of a network of various independent Stand-alone BACNet Interface and BACNet Digital Controllers, electric/electronic control equipment, thermostats, sensors, controllers, valves, dampers, actuators, panels and related hardware, software and other accessory equipment, along with a complete system of electrical control wiring, and software generation to fill

the intent of the specifications and provide for a complete and operable system.

- B.E. The control systems shall be installed modified by competent control mechanics and electricians regularly employed by the manufacturer of the control equipment. All control equipment shall be the product of one (1) manufacturer and all components shall be capable of ~~being replaced by the manufacturer of the control equipment.~~
- C. ~~Information on the design of the system shall be provided to the manufacturer of the control equipment.~~ markings. System installation shall comply with NFPA, NEMA, Local and National Codes.
- D. The Contractor shall submit a copy of the manufacturer's standard software and firmware licensing agreement for the owner's signature. Such license shall grant use of all programs and application software to Owner as defined by the manufacturer's license agreement, but shall protect manufacturer's rights to disclosure of trade secrets constrained within such software.
- E. All products of the Building Automation System shall be provided with the following agency approvals. With the submittal documents, verification that the approvals exist for all submitted products shall be provided. Systems or products not currently offering the following approvals are not acceptable.
- 0. UL-916; Energy Management Systems
 - 0. UL-873; Temperature Indication and Regulating Equipment UL-864; Subcategories UUKL, QVAX, UDTZ; Fire and Smoke Control Systems
 - 0. FCC; Part 15, Subpart J, Class A Computing Devices
- F. All products shall be labeled with the appropriate approval markings. System installation shall comply with NFPA, NEMA, Local and National Codes.
- 1. This specification makes numerous references to BACnet and BACnet devices. In all instances these references are acknowledged to be registered trademarks.
 - 2. All terminal unit controllers shall be networked into BACnet network (and be native BACnet or be provided with communication cards).

3. Provide controllers in accordance with the required sequence of operation as described in Part 4. When BACnet controls are provided, the Contractor shall provide BACnet devices/controllers with application source code, device resource files (DRF), and external interface files (XIF). A licensed copy of each software toolset required to install and commission the devices/controllers shall be provided to the owner.
4. The Contractor shall provide all BACnet wiring from the AC Units, fans including all conduit, enclosures, for all BACnet DDC points listed in the point lists and as shown on the contract drawings.
5. Contractor shall submit their proposed system architecture to the Engineer for their review and approval.

~~Contractor shall be responsible for providing all necessary equipment, materials, and labor for the installation and commissioning of the system.~~

1.101.06 SUBMITTALS

- A. See Section 230500 and General Conditions for additional requirements.
- B. Product Data: Provide data for each system component and software module.
- C. Shop Drawings.
 - manufacturer's installation instructions for all manufactured components.
 0. Indicate trunk cable schematic showing programmable control unit locations and trunk data conductors.
 0. List connected data points, including connected control unit and input device.
 0. Indicate all system graphics for all controlled systems including all air handling systems, hydronic pumping systems, monitored systems, data (connected and calculated) point addresses and operator notations.
 0. Show system configuration with peripheral devices, batteries, power supplies, diagrams, modems and interconnections.

0. Indicate description and sequence of operation of operating, user and application software
 0. Develop and provide emergency, fire, smoke management control and device response matrices in an MS Excel spreadsheet format.
 0. Show pneumatic/electronic ranges for each valve, damper, inlet vanes actuators etc., (i.e. 8-13 psi or 0-10 vdc).
 0. Show calculated air consumption for all pneumatically controlled devices and compressor sizing data. This does not release Contractor from providing specified compressor.
 0. Show system network architecture with high level and lower level transmission and communications network to include all addressable controllers, communication repeaters, routers, gateways, operator workstations, terminal connection ports, network servers, printers, etc.
 0. All control logic and controllable components shall be depicted and identified within each matrices developed.
- D.C. Manufacturer's Installation Instructions: Indicate manufacturer's installation instructions for all manufactured components.
- O.D. Project Record Documents: Record actual locations of control components, including control units, thermostats and sensors, trunk cable routing, junction boxes, transformers, VAV terminal box power circuiting, box addresser.
1. Revise shop drawings to reflect actual installation and operating sequences.
 2. Include submittal data in final "Record Documents" form.
 3. All start-up/checkout documentation shall be initial and signed by the on-site control technician with intimate knowledge of the project.
 4. Provide start-up/checkout documentations for all DDDC controllers connected to the existing BMS network.

Documentation shall include all controller points used and unused (spare). Furthermore, all final settings, calibration, coefficient valves, K factors, spanning, actual spring ranges, etc., shall be indicated for all active points in use.

5. Revise all control sequence for all controlled sequences for operation. Sequence of operation that restate the Design Engineer's sequences will not be acceptable. Complete details will be given within the sequences of operation provided by the Contractor. Details shall include but not limited to the following items control strategy, timers, delays, logic sequencing, start/stop, end devices involved, sensors involved, set points, globally commanded valves, shared data between panels and controllers.

5.

F.E. Operations and Maintenance Data:

1. Include interconnection wiring diagrams complete field installed systems with identified and numbered, system components and devices.
2. Include keyboard illustrations and step-by-step procedures indexed for each operator function.
3. Include inspection period, cleaning methods, cleaning materials recommended and calibration tolerances.

1.111.07 QUALITY ASSURANCE

- A. Perform work in accordance with NFPA 70 and Divisions 26, 27 and 28 specifications.
- B. Design system software under direct supervision of a Professional Engineer experienced in design of this Work and licensed within the State in which the project is located. All delegated design must be approved by SUCF. See directive 1C-13.
- C. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum ten (10) years of documented experience.
- D. Installer Qualifications: Company specializing in performing the type of work specified in this section with minimum ten (10) years of documented experience and approved by manufacturer.

- E. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. and testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

1.121.08 WARRANTY

- A. See Section 230500 and General Conditions for additional requirements.
- B. The system specified herein and shown on the drawings shall be guaranteed to be free from original defects in both material and workmanship for a period of twelve (12) months of normal use and service, excepting damages from other causes. This guarantee shall become effective starting the date the Contract work is accepted as complete by the Owner and in accordance with the General Provisions/Conditions.
- C. Provide five (5) year manufacturer's warranty for field programmable micro-processor based processor-based units.
- D. Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

1.09 MAINTENANCE SERVICE

- A. Provide service and maintenance of energy management and control systems for one (1) year from Data of Substantial Completion.
- B. Provide two (2) complete inspections during the first year, one (1) in each season, to inspect, calibrate and adjust controls as required and submit written reports.

1.10 PROTECTION OF SOFTWARE RIGHTS

- A. Prior to delivery of software, the Owner and the party providing the software shall enter into a software license agreement with provisions for the following:
 - 1. Limiting use of software to equipment provided under these specifications.
 - 2. Limiting copying.
 - 3. Preserving confidentiality.
 - 4. Prohibiting transfer to a third party.

1.11 GENERAL

- A. Acceptable manufactures subject to compliance with the specifications
 - 1. Corporation. See para. 1.05D above.Siemens
 - 2. Johnson Controls
 - 3. Honeywell
 - 4. Invensys
- B. The entire system and all control components shall be powered with emergency power.
- C. All electrical work shall comply with Divisions 25, 27 and 28 Specifications.

PART 2 - PRODUCTS

2.01 ELECTRIC LOW VOLTAGE WIRING

- A. Furnish all labor and material to install the necessary wiring to accomplish the successful and complete operation of the new automatic system (DDC).
- B. All electric wiring, wiring connections and all interlocking required for the installation of the temperature control system, as herein specified, shall be provided by the Contractor, unless specifically shown on the Electrical drawings or called for in the Electrical specifications.
- C. Furnish all labor and material to install necessary relays, general purpose enclosures and appurtenances to control designated devices relative to the DDC.
- D. All wiring throughout shall be concealed where possible.
- E. All conduit used shall be Electrical Metal Tubing\$IMCEMT), 3/4" minimum size or larger. Conduit sizes shall be large enough to permit the individual conductors to be readily installed or withdrawn without damage to the conductors or their insulation. Splicing of wires will be permitted only in junction boxes or pull boxes. Conduit shall be rigid up to 12'-0" AFF in mechanical rooms.

- F. Conduit shall never to be relied upon for a fault current and safety ground return conductor.
- G. The ground system shall not be used as a current carrying conductor except for faults and noise suppression. The grounding system shall be used to control noise and transients which might affect the operation of the automation system. As such, the ground requirements shall be in excess of a grounding system used solely for physical protection minimum (Code requirement).
- H. In all cases, the bond to ground shall be as short as possible. A ground point shall be derated by one (1) point (in order of preference) for each 50'-0" of conductor run between it and the automation equipment to be grounded. Therefore, a water pipe bond located 10'-0" away will be preferable to a structural steel bond located 150'-0" away.
- I. Set screw connectors shall be galvanized or plated steel. White metal cast type will not be permitted.
- J. Flexible conduit shall be used at field devices, i.e., pressure switches, flow switches, temperature devices, etc. Convolutions shall be steel, interlocked continuously. Aluminum will not be permitted. "Liquidtight" shall be used in wet locations. Flexible connector shall be a minimum of 18" long.
- K. Only core drilling is permitted to pierce the floors in the electrical closets and elsewhere. The use of water for drilling shall be controlled by a suitable vacuum system, using proper dams to prevent damage to floors below. The ATC Contractor shall be responsible for providing a suitable sleeve in all core drilled holes as specified herein.
- L. All wiring shall be run in IMCEMT and as noted below:
1. Sensor to Panel (Block Wall): In Wall
 2. Sensor to Panel (Stud Wall): In New Conduit (IMCEMT)
 3. Sensor to Panel (Mechanical Room): In New Conduit (IMCEMT)
 4. Panel to Front End Workstation: In New Conduit (IMC)
 5. Front End: In New Conduit (IMC)

M. Wiring

1. Type THHN solid #18 AWG for control wiring in dry location up to 194°F.
2. Type THWN in wet location up to 167°F (solid #18 AWG).
3. Twisted shielded pair (18 gauge), with PVC cover, Belden #8760 or approved equal.
4. Conduit is not considered as a shield.
5. All wiring associated with the control signals to the smoke damper control/sequence must be in approved conduit.
6. All signal wiring to all field devices shall be run with no splices, separately from any wiring having voltage greater than 30 volts.

N. The Contractor shall install all shielded cable and ground systems in accordance with Division 23. The installation of ground loops shall not affect any sensing or control circuits.

O. All devices and equipment shall be mounted in minimum NEMA 1 enclosures.

P. In addition to the requirements specified above, all communication wiring cables shall include a minimum of (1) individually 100% shielded pair ([2] conductors) as unused spare conductors. Where the number of conductors and specific cable specified above for each type of communication wiring will not meet this requirement for spare conductors, Contractor shall provide approved equivalent product of Belden or other manufacturer with the necessary number of conductors and which meets the requirements specified above.

Q. Low Voltage Control Wiring

1. All Control components including damper motors, valve actuators, and all other control components shall operate on 24 volt24-volt power, unless 120 volt120-volt power is provided specifically by the electric trade, and the control components are accepted by the owner for 120 volt120-volt power. Any and all items not shown on electrical drawings on 120 volt120-volt power shall be provided with 24 volt24-volt power components.

2. The HVAC contractor shall provide all required step downstep-down transformers as required based upon allowable voltage drops. Obtain power for the control devices from the nearest electrical panel in the Electrical Closet located in the project scope area unless specific panel locations are shown on electrical drawings.
3. Low voltage control wiring shall be minimum 16 gauge, or heavier if required, twisted pair, 100% shielded with PVC cover Belden #9316 or approved equivalent product of other manufacturers run in conduit with no splices, separate from any wiring above 30 volts.

R.2.02 Coordination of Interfacing/Interlocking

- A. The Contractor shall be responsible for coordinating all required interface/interlocking software, software logic, sequencing and wiring necessary to provide a fully automated and fully functional operable system to meet or exceed the intent of the Design Engineer's Sequence of Operation. Coordination may include but not limited to the following at no additional cost to the Owner. Variable frequency drive (VFD) interlocking and wiring logic including software, relays factory/field installed wiring and/or VFD drive modifications. This would include coordination of miscellaneous points as specified under point list in this specification. Systems to include all points analog, digital, pneumatic sensors wiring, software, wiring, communications gateways, etc., to connect and communicate to existing any BMSFire, Plumbing, HVAC, Lighting, ATC, Security, World Wide Web (Internet) systems installed under this project.

2.03 CUSTOM APPLICATION CONTROLLER (CAC)

A. General Requirements

1. Custom BACnet Application Controllers shall be equipped with either a minimum of 64K programmable non-volatile (flash) memory for general data processing, power supply, input/output modules, termination blocks, network transceivers.
2. Operating system software, custom operating sequence software (manufacturer's tool sets as defined in Article 2.1) and application programs shall be stored in programmable, non-volatile memory.

3. The CAC unit shall be equipped with a dedicated clock battery, continuously recharged via trickle-current, or equivalent.

B. CAC Software

1. General: A CAC shall be able to operate in standalone mode, as needed for specified control applications. Software shall include a complete operating system (O.S.), communications handler, point processing, standard control algorithms, and specific control sequences.
2. O.S. software shall reside in programmable flash memory, operate in real-time, provide prioritized task scheduling, control time programs, monitor and manage CAC to OI communications, and scan inputs and outputs. O.S. shall also contain built in diagnostics.
3. Input/Output Point Processing Software shall include:
 - a. Continuous update of input and output values and conditions. All continuous points are to be updated at a minimum of one-second intervals.
 - b. Reasonability checks on all analog inputs against the previously read value and discards those values falling outside pre-programmed reasonability limits.
 - c. Assignment of proper engineering units and status condition identifiers to all analog and digital input and outputs.
 - d. Analog input alarm comparison with the ability to assign two individual sets of high and low limits (warning and actual alarm) to an input or to assign a set of floating limits (alarm follows a reset schedule or control point) to the input. Each alarm shall be assigned a unique differential to prevent a point from oscillating into and out of alarm. Alarm comparisons shall be made each scan cycle.
 - e. De-bounce of digital inputs to prevent nuisance alarms. De-bounce timing shall be adjustable from two seconds to two minutes in one-second increments.
4. Alarm Lockouts

- 1) Alarm lockout software shall be provided to prevent nuisance alarms. On initial start-up of air handler and other mechanical equipment a "timed lockout" period shall be assigned to analog points to allow them to reach a stable condition before activating alarm comparison logic. Lockout period is to be programmable on a per point basis from 0 to 90 minutes in one-minute increments.

C. Custom DDC Control Loops

1. Custom DDC programs are to be provided to meet the control strategies as called for in the sequence of operation sections of these specifications. Each DDC Controller shall have resident in its memory and available to the programs a full library of DDC algorithms, intrinsic control operators, arithmetic, logic and relational operators for implementation of control sequences:
 - 1) All DDC setpoints, gains and time constants associated with DDC programs shall be available to the operator for display and modification via the SOC (portable operator's terminal).
 - 2) DDC control programs shall include an assignment of initialization values to all outputs to assure that controlled devices/controllers assume a fail-safe position on initial system start-up.

2.04 ELECTRONIC INPUT/OUTPUT DEVICES

A. Temperature Sensors and Transmitters

1. General Sensor & Transmitter Requirements
 - a. Provide sensors and transmitters required as outlined in the input/output summary and sequence of operation and as required achieving the specified accuracy as specified herein.
 - b. Temperature transmitters shall be equipped with individual zero and span adjustments. The zero and span adjustments shall be non-interactive to permit calibration without iterative operations.

Provide a loop test signal to aid in sensor calibration.

- c. Temperature transmitters shall be sized and constructed to be compatible with the medium to be monitored. Transmitters shall be equipped with a linearization circuit to compensate for non-linearity of the sensor and bridge and provide a true linear output signal.
- d. Temperature sensors shall be of the resistance type and shall be either three-wire 100-ohm platinum RTD, or two-wire 1000-ohm platinum RTD.
- e. Thermistors may be acceptable provided that the temperature vs. resistance curves are contained either in the controller's software or firmware and that its performance is as specified herein elsewhere. Submit proof of the software mathematical equation or the firmware conversion charts together with the temperature/resistance charts from the manufacturer of the sensor. Thermistors shall be of the Thermistor (NTC) Type with a minimum of 100 ohm/°F resistance change versus temperature to insure good resolution and accuracy. Thermistors shall be certified to be stable $\pm 0.24^{\circ}\text{F}$. over five years and $\pm 0.36^{\circ}\text{F}$. accurate and free from drift for five years.
- f. The following accuracies are required and include errors associated with the sensor, lead wire and A to D conversion.

Point Type	Accuracy
• Room Temperature	1.00°F
• Duct Temperature	0.5°F

- 2. Sensors used in BTU or process calculations shall be accurate to $\pm 0.10^{\circ}\text{F}$. over the process temperature range. Submit a manufacturer's calibration report indicating that the calibration certification is traceable to the National Bureau of Standards (NBS) Calibration Report Nos. 209527/222173.
- 3. Room Sensors (Temperature Only)
 - a. Terminal unit temperature sensors shall all be of the thermistor (NTC) type with a 100-ohm/°F

resistance change versus temperature change to insure good resolution and accuracy.

- b. Sensor shall be supplied with a vertical base for mounting on a standard single gang junction box supplied by the Temperature Control Contractor.
 - c. Sensors shall be able to provide access to a local BACnet network using built-in communication jack.
 - d. Programmable BACnet thermostats (with ability to connect to BACnet network)
- 4. In lieu of having a separate remote temperature sensor driving a native BACnet controller, one may combine the sensor and controller components into one thermostat.
 - 5. BACnet thermostats shall have integral temperature sensor with LCD and setpoint adjustments of +3°F. Projects shall use a central BACnet scheduler.
 - 6. Thermostat shall be powered from 24VAC. Thermostat shall provide BACnet Standard Objects for Space Comfort Controller. Thermostat shall be able to provide peer to peer communication and shall utilize the BACnet protocol.

B. Electronic Damper Actuators

- 1. General Requirements (where required)
 - a. Electronic actuators shall be electric, direct-coupled type capable of being mounted over the shaft of the damper. They shall be UL-listed and the manufacturer shall provide a 2-year unconditional warranty from the date of Substantial Completion. Power consumption shall not exceed 8 watts or 15 VA of transformer sizing capacity per high torque actuator nor 2 watts or 4 VA for VAV actuators. Sound level shall not exceed 45 dB for high torque or 35 dB for VAV actuators.
 - b. Electronic overload protection shall protect actuator motor from damage. If damper jams, actuator shall not burnout. Internal end switch type actuators are not acceptable. Actuators may be mechanically and electrically paralleled on

the same shaft to multiply the available torque. A reversing switch shall be provided to change action from direct to reverse in relation to control signal as operation requires.

- c. Electronic damper modulating actuators shall be driven by a 0-10VDC or 4-20 mA signal.

2. Control Damper Actuators

- a. Damper actuators shall be modulating, spring-return, normally-closed for fail-safe operation.

- b. The control circuit shall be fully modulating using 0-10VDC or 4-20mA signals. Accuracy and repeatability shall be within $\pm 1/21$ of control signal. A 0-10VDC or 4-20mA signal shall be produced by the actuator that is directly proportional to the shaft clamp position which can be used to control actuators which are paralleled off a master motor or to provide a feedback signal to the automation system indicating damper position. Accuracy shall be within $\pm 2.5\%$.

- c. Acceptable manufacturers: Belimo, Siemens (formerly Staefa), Dodge, TAC or Delta.

- 1) Power: Nominal 24 VAC, 60 Hz.
- 2) Operating Temperature: 32°F to 122°F
- 3) Display Range: -40°F to 122°F
- 4) Transceiver for MS/TP network: RS-485; 38.4 kbps
- 5) LCD: 2 rows - 8 characters each
- 6) Resolution: $\pm 0.2^\circ\text{F}$
- 7) Control Accuracy: $\pm 0.9^\circ\text{F}$ at 70°F (calibrated)
- 8) Sensor Range: Heating: 40°F to 90°F
- 9) Sensor Range: Cooling: 54°F to 100°F

- 10) Provide local programmable occupied/unoccupied override adjustment for PA Spaces.
- 11) Remote mount temperature sensor: shall be 10 K-ohm NTC thermistors or approved equal

2.05 TEMPERATURE AND ELECTRICAL MEASURING APPARATUS

A. Current Transformers

1. The current transformers shall be designed to be installed or removed without dismantling the primary bus or cables. The transformer shall be of a split core design.
2. The core and windings shall be completely encased in a UL approved thermoplastic rated 94VA. No metal parts shall be exposed other than the terminals.
3. The current transformers shall meet the following specifications:
 - a. Frequency Limits: 50 to 400 Hz.
 - b. Insulation: 0.6 KV Class, 10 KV BIL.
 - c. Accuracy: $\pm 1\%$ at 5.0 to 25.0 VA accuracy class with U.P.F. burden.
4. Provide a disconnect switch for each current transformer.

B. Current Sensing Switches

1. Current sensing switch shall be self-powered with solid-state circuitry and a dry contact output. Current sensing switches shall consist of a solid state current sensing circuit, adjustable trip point, solid state switch, SPDT relay and an LED indicating the on or off status. A conductor of the load shall be passed through the window of the device. It shall accept over-current up to twice its trip into range.

C. Relays

1. Relays other than those associated with digital output cards shall be general purpose, enclosed plug-in type when mounted within an enclosure. Relay configurations that are also acceptable include assemblies that house

relay contacts within their own enclosure which is mounted externally on an enclosure. Number of contacts and operational function shall be as required.

2. Solid State Relays (SSR): Input/output isolation shall be greater than $10E9$ ohms with a breakdown voltage of 1500V root mean square or greater at 60 Hz. The contact life shall be 10×10^6 operations or greater. The ambient temperature range of SSRs shall be -20 to $+140^{\circ}\text{F}$. Input impedance shall not be less than 500 ohms. Relays shall be rated for the application. Operating and release time shall be for 100 milliseconds or less. Transient suppression shall be provided as an integral part of the relay.

D. Contactors:

1. Contactors shall be Definite Purpose specifically designed for the heating, ventilating, air conditioning, and refrigeration industry (HVACR) and suitable for the switching of single or three phase loads as applicable.

2.06 BACNET NETWORK COMMUNICATION REQUIREMENTS

- A. Wired MS/TP network communication shall be via channels consisting of twisted pair with shield conductor or BACnet approved cable.
- B. BACnet IP Cable shall be in accordance with the most recent IEEE 802.3 standards.
- C. Communication conduits shall not be installed closer than six feet from high power transformers or run parallel within six feet of electrical high power cables. Care shall be taken to route the cable as far from interference generating devices as possible.
- D. There shall be no power wiring, in excess of 24 VAC, run in conduit with communications wiring. In cases where signal wiring or control power wiring is run in conduit with communication wiring, all communication wiring, signal wiring and control power wiring shall be run using separate twisted shielded pairs with the shields grounded in accordance with the manufacturer's wiring practices. Low voltage power wiring that exceeds 24 VAC shall be run separate from the BACnet communications twisted pair (MS/TP) and/or BACnet IP BACnet wiring.
- E. System Architecture

1. The Contractor shall provide the BACnet control BACnet network as shown on the contract drawings.

2.07 ALARMING, TRENDING, AND SCHEDULING NETWORKING FUNCTIONS

- A. The Contractor shall coordinate with the BMS vendor for the following control network communication functions:
 1. Alarm Processing. Any object in the system shall be configurable to alarm in and out of normal state.
 - a. Binary Alarms: Each binary object shall be set to alarm based on the operator specified state.
 - b. Analog Alarms: Analog alarms shall be provided by the CONTRACTOR and each analog object shall have both high and low alarm limits and warning limits. Alarming shall be able to be automatically and manually disabled.
 2. The BMS vendor software is to be utilized to display alarming, event logging or trending where this software is employed as the GUI. All binary alarming, capacity calculations, etc., are to be accomplished at the local CAC.
- B. Applications Editors. Each DDC Controller shall support full screen editing of all system applications. Contractor shall provide editors for each application at DDC Controller(s). The applications shall be downloaded and executed at the appropriate DDC Controller(s). All controlling, scheduling, start/stop applications are to be compatible with the BMS software and as approved by the Engineer.
 1. Controller. Contractor shall provide a full screen editor for each type controller and application that shall allow the operator with proper password to view and change the configuration, name, control parameters, and system setpoints.
 2. Scheduling. Contractor shall provide an individual 7-day time schedule for each piece of equipment controlled by the BMS. Each of these schedules shall include the capability for start, stop, and night economizer actions. Each schedule may consist of up to (10) events. When a group of objects are scheduled together, provide the capability to define advances and delays for each member. Each schedule shall consist of the following:

- a. Weekly Schedule. Provide separate schedules for each day of the week.
- b. Exception Schedules. Provide the ability for the operator to designate any day of the year as an exception schedule. This exception schedule shall override the standard schedule for that day. Exception schedules may be defined up to a year in advance. Once an exception schedule is executed it shall be discarded and replaced by the standard scheduled for that day of the week.
- c. Holiday Schedules. Provide the capability for the operator to define special or holiday schedules. These schedules may be placed on the scheduling calendar and shall be repeated each year. The operator shall be able to define the length of each holiday period.
- d. Equipment Coordination. CONTRACTOR shall provide a full screen editor that allows equipment to be grouped for proper operation as specified in the sequence of operations.

PART 3 - EXECUTION

3.01 PROJECT MANAGEMENT

- A. The ATC Contractor shall designate a project manager who will be responsible for the following:
 1. Construct and maintain project schedule.
 2. On-site coordination with all applicable trades and subcontractors.
 3. Authorized to accept and execute orders or instructions from Owner/Architect.
 4. Attend project meetings as necessary to avoid conflicts and delays.
 5. Make necessary field decisions relating to this scope of work.
 6. Coordination/Single point of contact.

3.023.01 NUMBERING/NAMING CONVENTIONS

- A. The Contractor shall collaborate with the Owner directly to determine the Owner's preference for naming conventions, etc. before entering the data in the system.
- B. As a minimum the ATC Contractor shall submit to the Architect/Engineer and Owner the layout of the network, identifying all DDC controllers. Each controller will be identified by address and system being served. All physical and software generated objects, points and attributes shall be listed along with a description.

3.033.02 START-UP AND COMMISSIONING

- A. When installation of the system is complete, calibrate equipment and verify transmission media operation before the system is placed on-line. All testing, calibrating, adjusting and final field tests shall be completed by the installer. Verify that all systems are operable from local controls in the specified failure mode upon panel failure or loss of power.
- B.A. Provide any recommendation for system modification in writing to Owner. Do not make any system modification, including operating parameters and control settings, without prior approval of Owner.
- C.B. The ATC Contractor will provide industry standard checkout and startup checklists for each DDC controller installed for the project. If not standard is available, the ATC Contractor shall develop a spreadsheet in MS Excel format and submit to the Engineer for approval prior to system checkout.

3.043.03 INSTRUCTION AND ADJUSTMENT

- A. The Contractor shall provide factory-trained instructor to give full instructions to the owner designated personnel in the operation of the system installed. Instructors shall be thoroughly familiar with all aspects of the subject matter they are to teach. The Contractor shall provide all students with a student binder containing product specific training modules for the system installed. All training shall be held during normal working hours of 8:00 AM to 5:00 PM weekdays.
- B.A. Upon completion of the project, the Contractor shall:
 - 1. Fine-tune and "de-bug" all software control loops, routines, programs and sequences of control associated with the control system supplied.

- 2.1. Completely adjust and make ready for use, all transmitters, relays, damper operators, valves, etc., provided under this Section. Theis Contractor shall furnish copies of complete, detailed, calibrating checkout and commissioningary documentation for reach controller. Documentation shall list each procedure and shall be signed by the control specialist performing the service.

Furnish a complete set of system operation manual, including standard manufacturers' operating manuals, complete as-built installation diagrams, and complete software hardcopy documentation, as well as a magnetic media back-up.

Provide an on-site training program for the Owner's staff in the operation and use of the control system. Training shall include three (2) segments, as follows:

- a. Segment 1 shall include 16 hours of classroom and hands-on training. This segment shall instruct personnel in the system configuration, component characteristics, control strategy on each controlled system and all requirements for daily operation and use of the system. This segment shall give the Owner's representative a working proficiency in the day-to-day operational requirements (i.e., system monitoring, alarm acknowledgment, HVAC system troubleshooting techniques, setpoint and time schedule adjustments, manual override, etc.).
- b. Segment 2 shall include 6 hours of on-site training. This segment will be geared for the Owner's designated prime operator. An emphasis on overall software management and manipulation shall be made, to allow the prime operator(s) to make control strategy and overall facility and system management changes as required. Attendees shall have attended Segment 1.
- c. All training shall take place at the site and at times mutually agreed to between that ATC Contractor and the Owner. The ATC Contractor shall provide to the Owner's designated representative, at least three (3) weeks before each segment, a course syllabus outline and schedule.

The ATC Contractor shall provide all training material, reference material and training aids, as required, all as part of his Contract cost.

END OF SECTION 23509500

SECTION 232000 - HVAC PIPING AND JOINTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 WORK INCLUDED

- A. Furnish and install all piping, fittings, flanges, unions, bolting, gaskets, welding, and threading for all main piping network, branches and connections to all HVAC and electrical equipment and systems to make complete and operations systems.
- B. All systems shall be installed in accordance with local code including vent piping and relief discharge termination points.
- C. Secure all permits and local/state approvals for the installation of all components included under this Section.

1.03 RELATED SECTIONS

- A. Examine all drawings and criteria sheets and all other Sections of the Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this Section.

1.04 REFERENCES

- A. Applicable provisions of the following Codes and Trade Standard Publications shall apply to the work of this Section, and are hereby incorporated into, and made a part of the Contract Documents.
- B. ASME: American Society of Mechanical Engineers
- C. NFPA: National Fire Protection Association
 - 1. NFPA 54: National Fuel Gas Code
- D. ANSI: American National Standards Institute
 - 1. A13.1: Scheme for Identification of Piping Systems
 - 2. B16.1: Cast Iron Pipe Flanges and Flanged Fittings

- 3. B16.3: Malleable Iron Threaded Fittings Fittings
- 4. B16.4: Cast Iron Threaded Fittings
- 5. B16.5: Pipe Flanges and Flanged Fittings
- 6. B16.9: Factory Made Wrought Steel Butt Weld Fittings
- 7. B16.11: Forged Steel Fittings, Socket Weld and Threaded
- 8. B16.15: Cast Bronze Threaded Fittings
- 9.2. B16.18: Cast Copper Alloy Solder Joint Pressure Fittings
- 10. B16.20: Metallic Gaskets for Pipe Flanges Pressure Fittings
- 11. B16.21: Non Metallic Flat Gaskets for Pipe Flanges
- 12.3. B16.22: Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
- 13.4. B16.24: Cast Copper Alloy Pipe Flanges and Flanged Fittings Class 150, 300, 400, 600, 800, 1500 and 2500
- 0. B182.1 Square and hex bolts and screws
- 0. B182.2 Square and hex nuts
- 0. B16.39: Malleable Iron Threaded Pipe Unions
- 0. B16.42: Ductile Iron Pipe Flanges and Flanged Fittings
- 0. B31.1: Power Piping
- 0. B36.10: Welded and Seamless Wrought Steel Pipe
- 0. Z49.1: Safety in Welding and Cutting
- L. AWWA: American Waterworks Association
 - 0. C104/A21.4: Cement Mortar Lining for Ductile Iron Pipe and Fittings for Water
 - 0. C110/A21.10: Ductile Iron and Gray Iron Fittings for Water

- 0. C111/A21.11: Rubber Gasket Joints for Ductile Iron Pipe and Threaded Flanged
- 0. C151/A21.51: Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand Lined Molds, for Water or Other Liquids
- 0. C153/A21.53: Ductile Iron Compact Fittings, 3" thru 6", for Water and Other Liquids
- 0. C200: Steel Water Pipe 6" and Larger
- 0. C205: Cement Mortar Protective Lining and Coating for Steel Water Pipe
- 0. C206: Field Welding of Steel Water Pipe
- 0. C207: Steel Pipe Flanges for Waterworks
- 0. C208: Dimensions For Fabricated Steel Water Pipe Fittings
- 0. C600: Standard for Installation of Ductile Iron Water Mains and Their Appurtenances
- 0. C606: Standard for Grooved and Shouldered Joints
- 0. C210: Liquid Epoxy Coating System for the Interior and Exterior of Steel Water Pipes
- Z. CISPI: Cast-Iron Soil Pipe Institute
 - 0. 301: Hubless Cast Iron Sanitary System: With No-Hub Pipe and Fittings
- BB.E. ASTM: American Society for Testing and Materials
 - 1. A 47: Ferritic Malleable Iron Castings
 - 2. A 53: Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
 - 3. A 74: Cast Iron Soil Pipe and Fittings
 - 4. A 105/A105M: Forgings, Carbon Steel, for Piping Components
 - 5. A 106: Seamless Carbon Steel Pipe for High-Temperature Service

6. A 135: Electric-Resistance-Welded Steel Pipe
7. A 153: Zinc Coating (Hot Dip) on Iron and Steel Hardware
8. A 183: Carbon Steel Track Bolts and Nuts
9. A193: Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service
10. A194: Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service
11. A197: Cupola Malleable Iron
12. A 234/A23AM: Pipe Fittings of Wrought Carbon Steel and Alloy / Rev A: Steel for Moderate and Elevated Temperature
13. A 307: Carbon Steel Bolts and Studs, 60000 PSI Tensile Strength
14. A 312: Standard for Seamless and Welded Austenitic Stainless Steel Pipe.
15. A 536: Ductile Iron Castings
16. A 568: Steel, Sheet Carbon and High-Strength Low-Alloy / Rev A: Hot-Rolled and Cold-Rolled, General Requirements
17. A 795: Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use
18. B 32: Solder Metal
19. B 43: Seamless Red Brass Pipe, Standard Sizes
- 20.1. B 75: Seamless Copper Tube
- 21.2. B 88: Seamless Copper Water Tube
22. C 564: Rubber Gaskets for Cast Iron Soil Pipe and Fittings Materials
23. D 2000: Standard Classification System for Rubber Products in Automotive Application
- 24.3. F 36: Compressibility and Recovery of Gasket Materials

- 25.4. F 37: Sealability of Gasket Material
- 26.5. F 38: Creep Relaxation of a Gasket Material
- 27.6. F 146: Fluid Resistance of Gasket Materials
- 28.7. F 104: Non-metallic Gasket Materials
- 29.8. F 152: Tension Testing of Nonmetallic Gasket Materials
- 0. C 33: Standard Specification for Concrete Aggregates
- 0. D-2122: Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
- 0. D-2513: Standard Specification for Thermoplastic Gas Pressure / Rev. B: Pipe, Tubing and Fittings
- 0. D-1248: Standard Specification for Polyethylene Plastic Molding and Extrusion Materials
- 0. D-3350: Polyethylene Plastic Pipe and Fittings Materials

HH.F. Copper Development Association

1.05 SUBMITTALS

- A. See Section 232000 and General Conditions for additional information.
- B. Product Data: Include data on pipe materials, steam/condensate specialties, pipe fittings and accessories. Provide manufacturers catalogue information and mill certificates.
- C. Welders Certificate: Include welder's certification of compliance with ASME (BPV IX). and support methods, joining procedures.
- D.C. Manufacturer's Installation Instructions: Indicate hanging and support methods, joining procedures.
- E.D. Project Record Documents: Record actual locations of all piping, valves, traps and valve tag numbers.
- F. ~~Good joint copings and fittings shall be shown on drawings and not shown as details separately in field with typical design parts lists, exploded assembly views.~~
- G.E. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.

H.F. Provide piping plans to a minimum scale of $\frac{1}{4}$ " - 1'-0".

1.06 QUALITY ASSURANCE

- A. Installer: Company specializing in performing work of the type specified in this section, with documented experience.
- . All grooved joint couplings, fittings, valves, and specialties shall be the products of a single manufacturer. Grooving tools shall be of the same manufacturer as the grooved components.
- . Welders: Certify in accordance with ASME (BPV IX).

1.09 REGULATORY REQUIREMENTS

- . Conform to ASME B31.9 code for installation of steam and condensate piping systems including specialties.
- . Welding Materials and Procedures: Conform to ASME (BPV IX) and applicable state labor regulations.
- . Provide certificate of compliance from authority having jurisdiction, indicating approval of welders.

1.131.07 DELIVERY, STORAGE AND HANDLING

- A. Protect piping systems and specialties from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.141.08 ENVIRONMENTAL

- A. Do not install piping when environmental conditions are outside the specific limitations of the referenced codes and manufacturer's recommendations.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Provide all piping, fittings, flanges, couplings, unions, bolting, gaskets, welding, threading and soldering for main piping network, branches and connections to equipment as shown on the drawings and as required to provide complete systems. All piping, fittings and accessories shall conform to the appropriate Service Pipe Schedule as specified hereinafter.

1. Acceptable manufacturers contingent on compliance with the specifications.

- a. Pipe

- a) Cambridge Lee

- b) Cerro

- B. General [Edit as applicable]

1. All pipe and fitting shall be new, first quality material suitable for continuous operation under the conditions specified. All material shall be in conformance with ANSI Standards.
2. All pipe shall be a product of the United States of America. Mill certificate shall be provided as required.
3. All piping shall be clearly marked with material specification.
4. All pipe and material shall comply with the requirements and recommended practices of ASME B31.1 Power Piping Code (latest Edition and Addenda).
5. Elbows shall be long radius ANSI B16.9 unless otherwise specified.
6. Fittings shall be used at all branch connections from headers.
7. Acceptable fittings shall be tees. "Weldolets", "Threadolets" and "Sockolets" will also be allowed as specified. Fishmouth or shaped nipples will not be allowed.
8. Provide drains at low points and vents at high points of all piping systems and between pumps and check valves.
9. Steam pipes shall be provided with drip legs and traps at all low points and as otherwise specified.
10. Steam service as specified herein shall include steam trap piping to and including shut-off valve on trap discharge and relief valve discharge.
11. Condensate service shall start at the connection to the main valve where the branch to the steam trap starts.

12. Lubricants used for the installation of grooved couplings shall be approved by the coupling manufacturer.
- 13.8. All pipe and fittings with threaded ends shall have IPS threads cut clean and true and in conformance with the ANSI B1.20.1.
- 14.9. Threaded pipe and fittings shall be made up with special care to avoid marring or damaging pipe and fitting surfaces.
- 15.10. All threaded joints in steel and iron pipe shall be made up with pipe thread compound or other compound suitable for design temperature and pressure of piping. All threaded joints in copper pipe shall be made up with Teflon pipe tape, petroleum gas grade, wound on male threads, clockwise as viewed from end of pipe.
16. Provide high temperature brass, bronze steel or cast ductile iron (as appropriate) dielectric unions or flanges between dissimilar pipe materials to prevent galvanic action, as required. Gaskets shall be suitable for operation up to design temperature of the piping.
- 17.11. No joints shall be "backed-off" to align pipe and fittings.
- 18.12. Gauge lines shall be stainless steel with compression fittings.
0. Piping for compressed air for controls shall be copper.
0. Use "Never-Freeze" Copper Anti-Seize by Frederickseal or similar on all flange bolts. Torque all bolts to suitable values using torque wrenches.
0. All condensate piping and steam piping in inaccessible shafts, trenches, or tunnels shall be socket weld 2" and below.

2.052.02 SERVICE PIPE SCHEDULE

Service	Type	Grade	Wall		Joints (Minimum Sch. Shall match Wall)	
			to 10"	12" & Up	2" and Less	2½" & Up

Service	Type	Grade	Wall		Joints (Minimum Sch. Shall match Wall)	
			to 10"	12" & Up	2" and Less	2½" & Up
Miscellaneous drains to 2"	Hard Drawn Copper	ASTM B88B306	Type LDWV		DWV 95-5 Solder	
Refrigerant relief for all other units	Hard Drawn Copper	ASTM B88	Type L		Silver Brazed	Silver Brazed
Refrigerant relief for centrifugal chillers	A106 or A53 Seamless or ERW	A or B	Sch.40	Standard 0.375"	Threaded Malleable	Butt Welded
Refrigerant system	Hard Drawn Copper ACR	ASTM B280	Type LACR		Silver Brazed	Silver Brazed

2.062.03 FITTINGS

A. For Copper Tubing

1. Solder Joint: Wrought Copper, ANSI B16.22 or Cast Bronze B16.18.
 - a. 2" and less
 - 1) Silver brazing alloy.
 - b. 2½" and larger
 - 1) Silver brazing alloy.
 - a) For refrigerant piping and where noted: Silver brazing alloy, similar to Handy and Harman Easy-Flo.
2. Compression and Flared Fittings: Cast brass, ANSI B16.26.

2.07 FLANGES

A. For Copper Tube

0. Grooved Joint Flange Adapters

a. Ductile iron coated with copper-colored alkyd enamel, flat face, for direct connection to ANSI Class 125 and 150 flanges. Victaulic Style 641.

2.08 FLANGE GASKETS

- . One-piece ring type 1/16" thick, except as noted.
- . Suitable for temperature, pressure and service of system.
- . Compressed compound fiber type for the following:
 - 0. Low pressure steam and condensate return and pumped discharge.
 - 0. Hot water.
 - 0. Cold water.
- . For Joints of Dissimilar Metals
 - 0. Isolating gaskets, sleeves, and washers between flanges, bolts and nuts.
 - 0. Gaskets, similar to DuPont Teflon.

2.08 UNIONS

- . For Red Brass Pipe
 - 0. All bronze, 150 lb. wsp, ground joint seat.

a)

PART 3 - INSTALLATION

3.01 PIPING INSTALLATION

- A. Provide all piping systems as shown on the drawings and otherwise required to make a complete, workable and neat job, installing all valves, appurtenances, and grooved joint couplings, unions and gaskets. The Contractor shall use care arranging all piping as shown on the drawings and shall carefully examine the arrangements where offsets are indicated and shall follow details as shown.
- B. All piping shall be run to true alignment generally parallel or perpendicular to adjacent building walls, floors and ceilings and with uniform grades and spacing so as to present a neat and workmanlike appearance.
- C. Care shall be paid to the exact locations for all piping and equipment with respect to equipment, ducts, conduits, slabs, beams and lighting fixtures, so as to provide maximum access to all mechanical and electrical equipment in the buildings. Close coordination and cooperation shall be exercised with other Trades in locating the piping and

equipment in the best interests of the Owner. The drawings and specifications covering other work to be done in the buildings shall be carefully studied and arrangements made to avoid conflict.

- D. The drawings shall be followed where they are definite and provided such procedure causes no objectionable conditions or does not conflict with other Trades, Laws, Regulations or recommendations of equipment manufacturers. The drawings are intended to indicate the sizes of piping connections and if certain sizes are omitted, or unclear, obtain additional information before proceeding.
- E. Rough in for all equipment requiring connections to the Mechanical work. Obtain all necessary data on exact locations, sizes, connections, fittings and arrangements and exact routings as may be required for proper installation.
- F. Bushings shall not be used for reducers. Reducing fittings shall be used for all changes in pipe size and shall be as follows:
 - 0. Horizontal water piping: Eccentric flat on top for venting.
 - 0. Horizontal steam and condensate piping: Eccentric flat on bottom for drainage.
 - 0. Vertical water or steam: Concentric.
- J.F. Unions, grooved joint couplings or flanges shall be provided in conjunction with all equipment, coils, control valves and specialties in all pipe lines and at all points necessary to provide reasonable access to the piping systems.
- K.G. Ends of all pipes shall be reamed clean and all pipes shall be straightened before erection and measures shall be taken to preserve this cleanliness after erection.
- L.H. Support piping independently at all equipment so that the equipment is not stressed by piping weight or expansion.
- M.I. Arrange piping for maximum accessibility for maintenance and repair, locate valves for easy access and operation.
- N.J. Provide dielectric unions, waterway fittings or flanges between dissimilar pipe materials to prevent galvanic action as required.

- O.K. Provide proper provision for expansion and contraction in all portions of pipe work, to prevent undue strains on piping or apparatus connected. Provide double swings at riser transfers and other offsets to take up expansion. Arrange riser branches to take up motion of riser. Branch runouts to equipment shall have a minimum of (3) elbows, adequately spaced.
- P.L. All piping connections to equipment shall be made with offsets. Provide with unions, grooved joint couplings and/or flanges so arranged that the equipment can be serviced or removed without dismantling the piping. If equipment, when commissioned, becomes air bound or stratified, all necessary modifications to the piping system required to rectify the condition permanently shall be made to piping and equipment, furring, floors, walls, etc., at the Contractor's expense.
- Q.M. Pipe pitch, unless otherwise indicated on the drawings, shall be as follows:
1. Condensation Drainage:
 - a. Preferred: 1/4 in./ft., down in direction of flow.
 - b. Minimum: 1/8 in./ft., down in direction of flow.
- R.N. Copper tubing and galvanized steel shall not be mixed in any one run of piping, except as otherwise specified herein.
- S.O. During construction, temporarily close open ends of pipes with sheet metal caps or duct tape to prevent debris from entering piping systems.
- T.P. Where condensate piping, to meet job conditions, may have to set down under stoops, doors, etc., and again rise after passing these, the sets shall be made with 45° fittings and with Y-laterals at each end, with brass plugs to permit easy cleaning of trapped portions of pipe. At any points where return mains have to rise again, after being depressed, provide overhead "air lines" (not smaller than 1" in size) and connect the (2) high sides. Any turns in water sealed lines shall be made with crosses, with brass plugs in unused outlets to facilitate cleaning.
- U.Q. Joints in piping systems, for all services, shall be made tight and leakproof against test pressures. Leaks in screwed or flanged joints which cannot be eliminated by normal wrench tightening methods shall be repaired at the

joint. Under no circumstances shall caulking be allowed. No joints shall be backed off to align pipe fittings.

V.R. Refrigerant Piping and Connections

1. Provide all refrigeration piping, including thermal expansion valves, driers, moisture indicator sight glasses, shutoff valves, controls, gauges, insulation and other appurtenances, as required to complete the refrigeration system. Piping connections to the units shall be fitted with flexible pipe fittings and renewable unions.
2. The HVAC Contractor shall triple evacuate and field charge entire refrigeration system. All labor and materials required for evacuation, charging, as well as commissioning of the refrigerant systems, shall be provided by the HVAC Contractor. The refrigerant piping arrangement shall be in strict accordance with manufacturer's recommendations. Provide shop drawings indicating sizes and all required components and accessories for Architect's review prior to ordering equipment or installation.
3. All refrigerant piping exposed to weather outside the building shall be properly supported in a manner to allow expansion and contraction. All sleepers provided shall be secured and their installation shall be as directed and approved by the Architect.
4. Refrigerant piping joints shall be made with cadmium free 45% silver brazing filler metal having a melting point of 1225°F. Joint flux, if used, shall be compatible with materials. The outside surface at end of pipe and inside surface of fittings shall be thoroughly cleaned with steel wool or emery cloth, and cut pipe ends shall be reamed and all burrs shall be removed. Care shall be taken to ensure the entry of foreign particles into the system does not occur. While brazing, purge piping with low pressure nitrogen to prevent interior oxidation and to dry the system. Caution must be taken to continuously ventilate the work area and to avoid allowing nitrogen to concentrate in an enclosed area thereby expelling all of the oxygen and causing asphyxiation.
5. Traps shall be factory fabricated one-piece fittings or field assembled 45°-90°-45° elbows. Do not use 90°-90°-90° elbows.

3.02 CLEANING AND BLOWING OUT

- A. The equipment and piping installed under this Section shall be blown out under pressure and cleaned of foreign matter, through temporary connections where necessary, before the system is placed in service. Super heated high pressure steam piping shall be blown out following ASME procedures. Precautions shall be used to prevent foreign matter from getting into equipment and piping during construction. The supplier of water treatment equipment and chemicals shall recommend and furnish chemicals for the purpose of cleaning and blowing out of all systems. All chemicals, materials, instruments and labor shall be provided by the Contractor.
- B. The surfaces of all equipment and piping shall be clean upon completion of the work.
- C. All pipe line strainers shall be cleaned immediately before being turned over to the Owner for acceptance.
- D. During cleaning process, hammer welds to remove scale, weld slag and other debris.

3.03 TESTING

- A. Furnish all labor, material, instruments, supplies and services and bear all costs for the accomplishment of the tests herein specified. Correct all defects appearing under test and repeat the tests until no defects are disclosed; leave the equipment clean and ready for use.
- B. Perform all tests other than herein specified which may be required by Legal Authorities or by Agencies to whose requirements this work is to conform.
- C. Furnish all necessary testing apparatus, make all temporary connections and perform all testing operations required, at no additional cost to the Owner.
- D. All equipment and piping installed under this Contract shall be tested and found tight. Insulated or otherwise concealed piping shall be tested before being closed in. All leaking joints shall be corrected, retested and found tight. Such tests shall conform to the requirements of Local Codes but shall not be less than the equivalent of the tests called for herein. Threaded joints that leak shall not be seal-welded to correct leakage.
- E. Tests performed shall not relieve the Contractor of his responsibility for leaks which may develop after the tests are made.

- F. All piping systems shall be subjected to a hydrostatic test at 1 1/2 times operating pressure measured at the highest point in the system, for a period of (4) hours without drop in pressure.
- G. Tests of piping systems shall be conducted before connections to equipment are made and before piping is covered, buried or otherwise concealed.
- H. Systems found to have leaks shall be subjected to further tests when faulty joints have been repaired or replaced.
- I. Welded joints shall be subjected to a hammer test while under pressure.

END OF SECTION 232000

SECTION 2331010 - FIRE DAMPERS SHEET METAL WORK AND ACCESSORIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 WORK INCLUDED

- A. UL classified 1-1/2 hour rated static curtain type fire dampers, suitable for application in static HVAC systems only. Furnish and install a complete system of air distribution, including accessories, to all areas indicated on the contractor drawings.

A.

B. Create, coordinate and submit 1/4" scale Coordination Drawing in accordance with Section 230500.

B. Provide all ductwork, fittings and accessories to make a complete and operational system in all respects.

1.051.03 RELATED SECTIONS

- A. Examine all drawings and criteria sheets and all other Sections of the Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this Section.

1.061.04 REFERENCES

- A. Applicable provisions of the following Codes and Trade Standard Publications shall apply to the work of this Section, and are hereby incorporated into, and made a part of the Contract Documents.
 - A.B. Material standards shall be as specified or detailed hereinafter and as follows:
 - 1. 2020 NYS Mechanical Code
 - 2. CSFM - California State Fire Marshall Listing for Fire Damper and Smoke Damper.

3. NFPA 90A - Installation of Air Conditioning and Ventilating Systems.
4. UL 555 - Standard for Safety; Fire Dampers.
- 1.SMACNA (DCS) - HVAC Duct Construction Standards - Metal and Flexible.
- 1.UL 181 - Factory-Made Air Ducts and Connectors.

1.091.05 SUBMITTALS

- A. See Section 15050 230500 and General Conditions for Additional Requirements.
- A.Product Data: Provide data for duct materials, duct connectors and all accessories. Include sound attenuator test data in accordance with ASTM E477.
- B. Indicate materials, construction, dimensions, and installation details.
- A.C. Verify conformance to NFPA 90A, UL 555, CSFM, and applicable building code.
- A.The Contractor shall submit duct fabrication standards and methods of installation, in compliance with SMACNA and these specifications, for review and approval by the Architect, clearly indicating the combination of metal gauges and reinforcement intended for use for each pressure classification. Duct fabrication shall not be allowed until a satisfactory review of this Standard has been performed and fabrication drawings have been reviewed and coordinated. MERELY SUBMITTING COPIES OF THE SMACNA PRESSURE CLASS TABLES DOES NOT COMPLY WITH THIS REQUIREMENT.
- A.Provide scaled ductwork fabrication drawings. Fabrication drawings shall be double line and as a minimum include elevations, dimensions, sizes, all offsets rises and drops, air distribution devices.
- A.Provide scaled ductwork coordination drawings for all floors and systems in accordance with Section 235000, Submittals.
- A.Test Reports: Indicate pressure tests performed. Include date, section tested, test pressure, and leakage rate, following SMACNA- HVAC Air Duct Leakage Test Manual.

A.Manufacturer's Installation Instructions: Indicate special procedures for glass fiber ducts.

A.Manufacturer's Certificate: Certify that installation of glass fiber ductwork meet or exceed recommended fabrication and installation requirements.

A.Project Record Documents: Record actual locations of ducts, duct fittings and all accessories. Record changes in fitting location and type. Show additional fittings used.

1.171.06 QUALITY ASSURANCE

A. ~~At least 100% of the dampers shall be tested and certified to meet the requirements of the manufacturer's specifications. Testing 1 size only is not acceptable.~~

A.No Ductmate, Ward, Nixon or similar factory made slip-on connections will be permitted.

C.A. Manufacturer: Test and qualify with UL a complete range of damper sizes covering dampers specified. Testing 1 size only is not acceptable.

1.181.07 ENVIRONMENTAL REQUIREMENTS

A. Do not install duct sealants when temperature are less than those recommended by sealant manufacturers.

A.B. Maintain temperatures within acceptable range during and after installation of duct sealants.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly indicating manufacturer and material.

B. Storage: Store materials in a dry area indoors, protected from damage and in accordance with manufacturer's instructions.

C. Handling: Handle and lift dampers in accordance with manufacturer's instructions. Protect materials and finishes during handling and installation to prevent damage.

A.

PART 2 - PRODUCTS

2.01 SHEET METAL WORK

2.02 General

2.01 ACCEPTABLE MANUFACTURERS:

- A. Ruskin
- B. Prefco
- C. Air Balance
- D. Greenheck Fan Corp.
- E. Nailor Industries
- F. NCA Manufacturing Inc.

2.The drawings are diagrammatic and indicate the arrangements of the principal apparatus, ductwork and piping and shall be followed as closely as possible. Because of the scale of the drawings, it is not possible to show all offsets, rises, drops, rises, fittings, accessories, etc. The Contractor shall carefully investigate the structure, finish conditions, and the work of other trades affecting the work and arrange ductwork, piping, equipment, accessories, etc. accordingly. Provide the best possible arrangement so as to provide the maximum headroom and access to apparatus while providing the minimum resistance to airflow. This work and any extra fittings and offsets required shall be included in the project without extra charge.

2.In addition to sheet metal ductwork provided under this Contract furnish and/or install accessories and devices furnished by otherscontractor, including but not limited to smoke detectors. Provide and install miscellaneous sheet metal work including safing, mixing baffles, and blank off panels at unused louver areas.

2.All duct systems specified to be installed under this Contract, shall conform to the drawings, specifications, Standards, details and recommendations of the latest Edition of SMACNA "HVAC Duct Construction Standards - Metal and Flexible"; and "Round and Industrial Duct Construction Standards" (hereinafter referred to as Duct Manual). Where the requirements under this Section exceed the requirements of the Duct Manual, the specification shall govern. Wherever the word "should" appears, replace with the word "shall".

- 2.The Contractor shall submit duct fabrication standards and methods of installation, in compliance with SMACNA and these specifications, for review and approval by the Architect, clearly indicating the combination of metal gauges and reinforcement intended for use for each pressure classification. Duct fabrication shall not be allowed until a satisfactory review of this Standard has been performed. MERELY SUBMITTING COPIES OF THE SMACNA PRESSURE CLASS TABLES DOES NOT COMPLY WITH THIS REQUIREMENT.
- 2.All galvanized steel sheet metal shall have not less than 1.25 oz. of zinc on each side of each square foot of sheet. All other duct materials shall be as hereinafter specified as applicable to this Contract.
4. There will be no supply and/or return air system ductwork internally lined unless otherwise noted.
4. The Contractor shall clean and provide temporary caps on all ductwork during installation to prevent dust, dirt and debris from entering ducts during construction, including during shipping, handling and storage in the field.
4. All shop applied fabrication labels shall be applied to the exterior of the ducts. The Contractor shall remove any material applied to the inside of the ducts before installation.

2.02 DUCT CONSTRUCTION

A.Duct Construction Schedule

Minimum SMACNA Construction Standards						
Ductwork Location	Pressure Class Inches W.G.	Seal Class	Leakage Class	Material	Sound Lining	Table Notes
Return to Roof Top Units constant volume systems.	-4	A	4	G-90	No	
Supply from Roof Top Units constant volume systemsFan	±34	A	4	G-90	No	
General exhaust	-3	A	4	G-90	No	

2.03 ADDITIONAL CONSTRUCTION REQUIREMENTS

Minimum Requirements

0. The minimum gauge for any steel duct over 2" or under -2" pressure class shall be 24 gauge except when specified heavier.
 1. The minimum thickness of any aluminum duct shall be 0.040".
 1. The minimum diameter of any tie rod shall be 1/2".
 1. The maximum tie rod spacing shall be 42" unless specifically engineered in accordance with the SMACNA Industrial Rectangular Duct Standard.
 1. When tie rods intersect, they shall be welded to each other.
 1. No ductwork shall be constructed to less than $\pm 2"$ w.g. This means nothing is constructed to a standard between -2" w.g. and +2" w.g.
 1. Duct dimensions indicated are clear inside dimensions. The sheet metal dimensions shall be increased to accommodate internal liner where liner is required.
- A. All joints and seams in all ductwork and casings shall be sealed to SMACNA Seal Class "A". In finished areas, sealing compound shall be neatly applied to exposed ductwork and bands shall be provided over, to cover the sealant.
1. Some SMACNA constructions may not be suitable for the leakage classes specified even though they may meet the pressure class and should not be used.
 1. Seal class A Welded means all welded (i.e. transverse joints, longitudinal seams, spiral seams, fire dampers, volume dampers or any accessories) and in addition it means continuously welded.
 1. All sealants, adhesives and coatings shall be of approved kinds and qualities for each point of application, complying with recommendations for the use and storage.

1.The method of installation and materials for sealing the ductwork shall be submitted by the Contractor for review and approval by the Architect, as part of the ductwork construction standards and installation submittal.

1.

B. All longitudinal seams in all ductwork in excess of +2" w.g. or less than -2" w.g pressure class shall be made with formed Pittsburgh locks.

C.Grooved seam/flat lock/pipe lock joining methods is restricted to 2" W.G. pressure class only.

C.Button punch-snap lock seams are not to be used.

C.Concealed stainless steel ductwork shall have an ASTM mill rolled No. 1 or No. 2 D finish. Exposed stainless steel ductwork shall have an ASTM mill rolled No. 2 B finish, or higher grade as required by the Architect, with all welds ground smooth and final brushed with stainless steel wire brushes. All welds on exposed stainless steel ductwork shall be free of stain, burn-through, or discoloration to the satisfaction of the Architect.

C.Tie rods shall not be used in any plenum or large duct requiring internal access or use as an access pathway.

C.All ductwork required to be removable shall be companion flanged SMACNA Type T-22 for ductwork constructed to SMACNA Metal Duct Standard and companion flanged in accordance with Industrial Standards for ductwork required to be constructed to Industrial Standards.

C.Elbows

0. All dust collection ductwork elbows shall be a centerline radius equal to (2) duct widths or diameters. No reduction shall be allowed.

L.Radius elbows shall be used wherever possible. Where it is impossible or impractical to install a 1.5 times width to centerline radius of elbow (full radius elbow) lesser radii configurations shall be used, each with "radius-proportional" splitter vanes permanently installed within. No radius shall be less than 1.0 times the width. Provide square elbows in rectangular ducts with double thickness

vaness with a minimum radius of 4 1/2". Square elbows may only be used when radius elbows will not fit and where specifically approved by the Architect prior to fabrication and/or as required by coordination shop drawings. All offsets shall be of the radius type.

L.It is the intent of this specification to provide a duct system with minimum resistance to airflow. All take-offs shall be throated and transitions made as gradually as possible. "Bullhead" or sharp take-offs shall not be acceptable.

L.In addition to SMACNA requirements, ductwork in return systems without boxes, ductwork in supply systems without boxes, ductwork in exhaust systems without boxes, ductwork in any Constant Volume System and/or ductwork downstream of VAV Boxes shall be provided with:

a.Volume dampers in all branch takeoffs and in all main branches and ducts of all ductwork systems (supply, return and exhaust) for properly regulating and balancing airflow to all terminal outlets, for all duct sizes, whether shown on the drawings or not. The above requirement is mandatory.

a.

b.All rectangular dampers shall be opposed blade and each shall be controlled by an approved galvanized locking quadrant indicating the damper position, as detailed on the drawings.

c.Volume dampers installed into ductwork that is specified to be externally insulated shall have extended activator/handle rods with extension bracket such that adjustment of the damper handle will not disturb the insulation.

e.Coordinate the location and areas and fabricate the ductwork system accordingly.

E. Provide any and all balancing dampers required at no additional cost.

O.In addition to SMACNA requirements, all round ductwork, if used in lieu of rectangular supply and/or return/exhaust systems shall conform to SMACNA.

1.The use of flat oval ductwork shall be acceptable only with prior written approval of the Architect. **Note:** Flat oval shall not be used under negative pressure.

1.Round duct shall be manufactured of spiral lock seam. Ductwork up to 12"Ø and 2" w.g. pressure class can be manufactured with longitudinal lock seams.

1.All tees shall be conical.

1.All laterals shall be straight.

1.All taps through 10" diameter in size shall have a machine drawn entrance and all fittings shall have longitudinal seams, continuous-welded. Both sides of all welds shall be primed with zinc chromate.

1.All tap entrances shall be free of weld build-up.

1.Elbows in diameters 3" through 10" shall be 2-section stamped or pleated elbows. Larger elbows shall be gored construction. Elbows shall be fabricated to a centerline radius of 1.5 times the diameter. All gored elbows shall be fabricated according to the following schedule:

<u>Elbows</u>	<u># of Gores</u>
Up to 35°	2
36° to 71°	3
Over 71°	5

8.All field joints in diameters through 48" shall be made with a 2" long slip-fit or sleeve coupling provided assembly is not hindered. Ductwork over 48", and for all sizes where disassembly and removal is required, shall be joined with Vanstone or shop fabricated flanges.

8.All flanges and taps into spiral ducts shall be factory or shop fabricated and installed as hereinbefore specified. Shipment of loose flanges or taps for field installation shall be avoided.

8.All access doors for round duct shall be furnished by the access door manufacturer. Round duct access doors shall be of low leakage sandwich type suitable for systems up to 8" pressure, positive or negative. Round duct access doors shall be insulated and shall be equivalent to Ruskin model ARDD.

8.Unless specifically noted otherwise or required by special constraints, all elbows on ductwork changing direction from vertical to horizontal shall be 1.5 times radius.

SOUND ATTENUATORS FOR DUCTWORK

- F. Where indicated on the Drawings, provide in the ductwork packaged sound traps of proper models and sizes for the purpose of attenuating noise. Sound traps shall be as specified herein and shall conform with the requirements tabulated on the Drawings.

Construction

0. Rectangular Units: Fabricate casings with a minimum of 0.034-inch thick, solid galvanized ASTM A653 sheet metal for outer casing and 0.022-inch thick, ASTM A653 perforated galvanized sheet metal for inner casing.
0. Round Units:
 - . Outer Casings:
 - 0) ASTM A653 galvanized sheet steel
 - 0) Up to 24" in Diameter: 0.034" thick
 - 0) 26" through 40" in Diameter: 0.040" thick
 - 0) 42" through 52" in Diameter: 0.052" thick.
 - 0) 54" through 60" in Diameter: 0.064" thick.
 - 0) Casings fabricated of spiral lock-seam duct may be one size thinner than that indicated.
 - . Interior Casing, Partitions, and Baffles:
 - 0) ASTM A653 galvanized sheet steel
 - 1) At least 0.034" thick and designed for minimum aerodynamic losses
1. Sheet Metal Perforations: 1/8" diameter perforations for inner casing and baffle sheet metal.
1. Fill Material: Inert and vermin-proof fibrous material, acoustic grade glass fiber packed under not less than 5 percent compression.
1. Erosion Barrier: Polymer bag enclosing fill and heat-sealed before assembly or Tedlar film liner as a fill protection.

2. Fabricate silencers to form rigid units that will not pulsate, vibrate, rattle, or otherwise react to system pressure variations.

Do not use nuts, bolts, or sheet metal screws for unit assemblies.

- a. Lock form and seal or continuously weld joints.
- a. Suspended Units: Provide factory-installed suspension hooks or lugs attached to frame in quantities spaced to prevent deflection or distortion.
- a. Reinforcement: Provide cross or trapeze angles for rigid suspension.

G. Performance

2. The attenuation values obtained by the sound traps shall be not less than those tabulated on the Drawings. They shall be true attenuation values, only accomplished by the sound traps. These true attenuations shall not include any effects due to (1) end reflections, (2) room absorptions, (3) plenum absorption, (4) directivity, (5) beaming, (6) standing waves or (7) distance factors.
2. Adhesives, sealants, packing materials, and accessory materials shall have fire ratings not exceeding 25 for flame-spread index. Smoke developed index ratings shall not exceed 50 when tested according to ASTM E84.

- H. Air Flow Pressure Drop: Air flow pressure drop values shall not exceed those indicated on the Drawings. The air flow pressure drop performance shall be certified by the manufacturer to have been tested and rated in accordance with applicable portions of AMCA Bulletin 210, or with a method of air measurement approved by the Authority.

H. Source Quality Control:

0. Acoustic Performance: Test according to ASTM E477.
0. Record acoustic ratings, including dynamic insertion loss and self-noise power levels with an airflow of at least 2000-fpm face velocity.

1. Leak Test: Test units for airtightness at 200 percent of associated fan static pressure or 6-inch wg static pressure, whichever is greater.

Manufacturers: Subject to compliance with requirements, provide sound traps from one of the following (or approved equal):

0. Vibro-Acoustics
0. Industrial Acoustics Company
0. Price Industries
0. McGill AirFlow Corporation.
0. Or Approved Equal

2.03 SHOP APPLIED DUCT LINER

- I. Interior supply and return ducts and plenums (other than outside air plenums), as hereinbefore specified, where no sound attenuators are shown on plans, to have internal duct insulation shall be lined with 1" thick fiberglass duct liner equal to Manville Permacote Linacoustic R300.

A.Liner shall meet the requirements of UL 181, ASTM C665 Bacteriological Standards, UL 723 Flamespread and NFPA 90A for flamespread and smoke developed ratings as borne out by tests and ratings of UL. Liner shall have an NRC no less than 0.80, based on Type A mounting as tested in accordance with ASTM C423-90 "k" factor not to exceed 0.25 (1") at 75°F mean temperature in accordance with ASTM C-518.

A.Maximum air friction in straight 24" diameter duct conveying 6200 cfm airflow at 2000 fpm velocity shall be 0.36" per 100'-0"

A.No erosion of insulation material shall occur below 5000 fpm duct velocity. Rigid board liner shall be constructed of strong glass fibers bonded with thermosetting resin.

A.All surfaces shall be protected with an acrylic coating.

A.Liner shall be applied with 100% coverage of approved fire resistant adhesive. Ducts over 20" in size in any direction shall be secured with mechanical fasteners ("stick-clips") on 12" centers and within 3" of ends.

- A. Leading and exposed edges of liner joints shall be coated with fire resistant adhesive. Permacote-coated surface shall face the airstream.
- A. The ductwork system shall be lined/sealed and installed in a manner to allow for low temperature air operation.
- A. Care shall be exercised to ensure that no gaps or bare sheet metal exist, which might create condensation.
- A. Acoustical liner installed in medium pressure ductwork and wherever lining starts abruptly from unlined ductwork shall be "nosed" with sheet metal flanging at all joints in accordance with SMACNA liner nosing details.
- A. Liner shall be coated with a surface coating that does not support the growth of fungus or bacteria as determined by tests in accordance with ASTM C1071 and ASTM G21 and G22. Liner shall be sound absorptive.
- A. The smooth black surface of the liner shall face the airstream and top pieces shall support the side pieces.
- M. Lining on double wall duct systems may be completely covered with a layer of perforated minimum 24 gauge sheet metal (3/16 sq.in. holes on 7/16" staggered centers). The perforated sheet metal inner liner shall be secured with rivets and washers at intermediary points maximum 12" on center on all spans greater than 12" in width or height. Sheet metal nosing shall be provided to cover all insulation exposed-to-airstream edges, by bending of the sheet metal liner. Other methods of nosing, if different than the one specified, shall be submitted for review by the Architect prior to installation.

2.03 FLEXIBLE CONNECTIONS (AHUS, EMERGENCY GENERATORS, FANS)

- L. Provide flexible connections of 4" minimum fabric width
 - 0. Equipment equipped with fans
 - 2. All ductwork that crosses building expansion joints
- L. The connections shall be placed as close to the equipment as practical except at fan suction connections and the clear gap at rest shall be not less than 3". At fan suction connections, locate flexible duct connection at least 3 duct diameters away from fan inlet connection.

- B. There shall be no tension of the fabric under static or dynamic loads
- B. All fabric for flexible duct connections to equipment shall be a minimum of 22 oz. glass fabric, double coated with neoprene, fire retardant, waterproof, airtight, and approved by UL, similar to Ventfabrics or Ventglass.
- B. Exterior flexible connection shall be insulated type similar to Duro Dyne.
- B. Flexible connections shall be fabricated from approved flameproofed fabric conforming to NFPA 90A. Asbestos shall not be acceptable.
- B. Flexible connections shall be installed further upstream from fan powered equipment (in the main duct size) to prevent obstruction of the fan inlet due to suction of the fabric into the airstream.
- B. Ductwork shall be increased in size where the flexible connections are located to prevent fully drawn in connections from blocking any duct area. Submit detail for review.

2.02 FIRE DAMPERS

- A. Fire Rating: UL 555 classified and labeled as a 1-1/2 hour static fire damper.
- B. Air Flow Rating: UL approved for dual directional air flow.
- C. Integral Sleeve Frame: Minimum 20 gage x 12 inches (0.9 x 305 mm) roll formed, galvanized steel.
 - 1. Factory Sealant: Apply to dampers in HVAC systems with pressures to maximum 4 inches w.g. (1 kPa).
- D. Blades:
 - 1. Style: Curtain type, in airstream.
 - 2. Action: Spring or gravity closure upon fusible link release.
 - 3. Orientation: Horizontal.

- 4. Material: Minimum 24 gage (0.6 mm) roll formed, galvanized steel.
- E. Closure Springs: Type 301 stainless steel, constant force type, if required.
- F. Temperature Release Device:
 - 1. Fusible link, 165 degrees F .
- G. Finish: Mill galvanized.
- H. Assembly: Factory assemble damper and accessories and furnish as a single unit conforming to UL 555.
- I. Performance Data:
 - 1. Temperature Qualified: Damper qualified in accordance with UL 555 as a 1-1/2-hour fire damper.

2.03 ACCESSORIES

- A. Picture Frame Mounting Angles:
 - 1. 1. One-piece, roll formed retaining angles [1-1/2 x 1-1/2 inches (38 x 38 mm)] [1-1/2 x 2-1/2 inches (38 x 64 mm)].
 - 2. 2. Factory matched and shipped on individual damper.
 - 3. 3. Factory prepunched screw holes.
 - 4. 4. Requires factory sleeve.
- B. Steel Mullions: For dampers in oversized masonry wall openings.
- C. Breakaway Connection: Ductmate.

2.04 SOURCE QUALITY CONTROL

- A. Factory Tests: Factory cycle damper to assure proper operation.

PART 3 - EXECUTION

3.01 SHEET METAL INSTALLATION

- A. All ductwork shall be installed to true alignment, generally parallel or perpendicular to adjacent building

walls, floors and ceilings, so as to present a neat and workmanlike appearance. All fabricated, stored and installed ductwork shall be protected with removable caps, plastic or other means to prevent dirt, water and debris from entering duct system. The Contractor shall be responsible for maintaining a clean duct system and shall clean and/or replace any ductwork identified by the Owner or Architect as being deficient or dirty. The Contractor shall be responsible for all costs associated with the temporary protection cleaning and/or replacement of ductwork. All fabrication labels shall be applied to the exterior of the duct. The Contractor shall be responsible for the removal of all internal labels if such labels were incorrectly applied.

- 3.02 Care shall be paid to the exact locations of all sheet metal work with respect to equipment, ducts, conduits, piping, slabs, beams, columns, ceiling suspension systems, lighting fixtures and electrical, plumbing and fire protection systems in the building. Close coordination and cooperation shall be exercised with other Trades in locating the piping and equipment in the best interests of the Owner. The drawings and specifications covering other work to be done in the building shall be carefully studied and arrangements shall be made to avoid conflict.

3.02 EXAMINATION

- A. Inspect areas to receive dampers. Notify the Engineer of conditions that would adversely affect the installation or subsequent utilization of the dampers. Do not proceed with installation until unsatisfactory conditions are corrected.

3.03 INSTALLATION

- A. Install dampers at locations indicated on the drawings and in accordance with manufacturer's UL approved installation instructions.
- B. Install dampers square and free from racking with blades running horizontally.
- C. Do not compress or stretch damper frame into duct or opening.
- D. Handle damper using sleeve or frame. Do not lift damper using blades or accessories.

- E. Install bracing for multiple section assemblies to support assembly weight and to hold against system pressure.
Install bracing as needed.

END OF SECTION 233100

SECTION 233900 - FANS AND ACCESSORIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 WORK INCLUDED

- A. Furnish and install all fans of the various types, arrangement and sizes specified herein and as scheduled on the drawings.
- B. Fans shall include all motors, drives, curbs, flashing, special coatings and accessories.
- C. Furnish and install backdraft dampers with all fans.
- D.C. Furnish and install all roof curbs and automatic dampers.

1.03 RELATED SECTIONS

- A. Examine all drawings and criteria sheets and all other Sections of the Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this Section.

1.04 REFERENCES

- A. Applicable provisions of the following Codes and Trade Standard Publications shall apply to the work of this Section, and are hereby incorporated into, and made a part of the Contract Documents.
- B. Material standards shall be as specified or detailed hereinafter and as following:
 - 1. AMCA 99 - Standards Handbook; 1986.
 - 2. AMCA 210 - Laboratory Methods of Testing Fans for Rating Purposes; 1985.
 - 3. AMCA 261 - Directory of Products Licensed to Bear the AMCA Certified Ratings Seal; 1995.

4. AMCA 300 - Test Code for Sound Rating Air Moving Devices; 1994.
5. AMCA 301 - Method of Publishing Sound Rating Air Moving Devices; 1994.
6. NEMA MG 1 - Motors and Generators; 1993 (and Revision 1).
7. NFPA 96 - Installation of Equipment for the Removal of Smoke and Grease Vapors from Commercial Cooking Equipment; 1994.
8. UL 705 - Power Ventilators; 1994.

1.05 SUBMITTALS

- A. See Section 230500 and General Conditions for additional requirements.
- B. Submit certified curves showing fan performance with system operating points plotted on curves.
- C. Submit motor data sheets including motor efficiency and power factor at various loadings of nameplate horsepower. Motor efficiency and power factor shall be shown for 100%, 75% and 50% of nameplate horsepower. Submit data on efficiency and power factor required for motors 1 HP and above only. Motors shall have premium efficiency motors with minimum efficiency on motors listed in specification.
- D. Submit bearing sizing calculations for each similar size and type of fan. Fan bearing calculations shall be based on fan at maximum operating conditions including belt pull. Calculations shall be done for both fan bearings and motor bearings. Calculations required on centrifugal fans, vent sets in-line fans, wall mounted propeller fans and vane axial fans only.
- E. Submit sound power levels for each size and type of fan. Sound levels shall be in all (8) octave bands for discharge of fan, inlet to fan, and radiated noise through casing.
- F. Submit certified shop drawings indicating all dimensional data, and operating and maintenance clearances.

1.06 QUALITY ASSURANCE

- A. Fans shall conform to most recent AMCA Bulletins regarding construction and testing. Fans shall be tested and rated per AMCA and shall be selected in proper operating range without motor overloading and fan surge.
- B. Manufacturers must prove experience in the production of similar products of this type for at least ten (10) years prior.
- C. Fans shall be air and sound certified in accordance with AMCA 210 and 300 and shall bear the AMCA seal.
- D. Kitchen Range Hood Exhaust Fans: Comply with requirements of NFPA 96.
- E.D. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. and other testing firm acceptable to the authority having jurisdiction and all suitable for the purpose specified and indicated.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Do not operate fans for any purpose, temporary or permanent, until ductwork is clean, filters are in place, bearings have been lubricated and fan has been test run under observation.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Manufacturers acceptable contingent upon product's compliance with the specifications are as follows:
 - 1. Roof Mounted Centrifugal/Inline Fans
 - a. Greenheck Fan Corp.
 - b. Loren Cook Co.
 - c. ACME Fan Co.
 - d. Twin City Fan
- B. Selection and Balancing

1. Provide and install items as listed in equipment schedules, as shown on drawings, and as specified, complete in all respects to the functions intended.
2. Provide fans capable of accommodating static pressure variations of $\pm 10\%$.
3. Provide balanced variable sheaves for motors 15 HP and under, and fixed sheaves for 20 HP and over.
4. Statically and dynamically balance fans in the field to eliminate vibration or noise transmission to occupied areas of the building. Provide certificate of compliance from manufacturer.
5. Provide OSHA and ANSI approved belt guards on interior mounted belt driven fans. Provide weatherproof ventilated housing for exterior mounted fans.
6. Provide special construction fans such as sparkproof, explosionproof, or coated fans as required by the schedule.
- 7.6. Provide safety, bird or insect screen where inlet or outlet is exposed.
- 8.7. All fans shall be manufactured in accordance with this specification even where techniques are required which are not considered standard by that manufacturer.
- 9.8. Verify fan arrangement with the Contractor including motor location for servicing and discharge arrangements for proper airflow.
- 10.9. Where fixed speed sheaves are specified for a particular fan, provide (2) additional sheaves (one motor and one drive) as necessary for final air balancing.

C. Painting

1. Each fan component shall be thoroughly cleaned, degreased and deburred before the application of a rust preventive primer.
2. Two (2) coats of a rust preventive primer shall be applied under a topcoat of air-dried epoxy or enamel. Minimum coating thickness shall be 5 to 6 mils. The

final coat shall be applied after final assembly to all surfaces.

0. Special coatings shall be provided for corrosive exhaust systems as specified under the fan specification.

. Additional Corrosion Protection

0. Fans serving laboratory fume hoods, or as scheduled on the drawings, shall have all components in contact with the airstream provided with a minimum of (2) coats of 5 mil thick air-dried Heresite VR500 coating.

. Inlet Vanes

0. Variable volume inlet vane control with modulating inlet dampers shall be provided as required by control sequence or as scheduled on the drawings. The inlet vanes shall consist of at least (7) blades per slide, each adequately supported with pivot bearings on each blade. Blades shall be center supported or cantilevered. Both sets of inlet vanes shall be operated by (1) lever mounted on the fan housing with connecting shaft between fan inlets. The inlet vane control operating mechanism and linkage may be center located or located inside the fan housing. The inlet vane control must be mounted in the inlet cone. Bolt-on type controls do not provide smooth inlet airflow and are not acceptable. Pneumatic operator shall be provided and installed by otherscontractor. Fan shall have stable operation over the entire variable inlet vane operating range from shut-off to free delivery.

. Special Fan Construction

0. Fans serving laboratory fume hoods, paint spray booth, or scheduled on the drawings, shall be constructed in accordance with AMCA 99-0401 Type "A" or "B" spark resistant construction.

2.092.02 FAN DRIVES

- A. All Fan drives shall be direct drive unless specifically indicated otherwise or direct drive fans are unavailable as demonstrated by contractor and approved by the owner in writing.

- B.A. All single phase fans shall be provided with variable speed (frequency) drives where fan motors are 3 phase. Where fan motors are single phase, the fans shall be provided with speed controllers with all required wiring modifications.

2.03 CEILING EXHAUST FAN

- A. Ceiling-mounted exhaust fans shall be of the centrifugal direct drive type. The fan housing shall be constructed of heavy-gauge galvanized steel. The housing interior shall be lined with 0.5 inch acoustical insulation. The outlet duct collar shall include a plastic backdraft damper. Outlet shall be adaptable for horizontal or vertical discharge. The grille shall be constructed of non-yellowing high-impact polystyrene and attached to the housing with hidden attachment screws.
- B. The access for wiring shall be external. The motor disconnect shall be internal and of the plug-in type.
- C. The motor shall be mounted on vibration isolators. The fan wheel shall be of the forward-curved centrifugal type and dynamically balanced. The fan shall have a rocker switch with 3 cfm settings located internally.
- D. Upon installation, the switch shall be selected to the desired CFM.
- E. All fans shall bear the AMCA Certified Ratings program AMCA Sound and Air Performance seal and shall be UL/cUL Listed.

2.102.04 ROOF MOUNTED INLINE CABINET CENTRIFUGAL FANS

- A. Duct-mounted exhaust, supply or return air fans shall be of the centrifugal direct drive type. The fan housing shall be constructed of heavy-gauge galvanized steel.
- B. The housing interior shall be lined with 0.5 inch (13 mm) acoustical insulation. The outlet duct collar shall include an aluminum backdraft damper and shall be adaptable for horizontal or vertical discharge. The access for wiring shall be external. The motor disconnect shall be internal and of the plug-in type.
- C. The motor shall be mounted on vibration isolators.
- D. The fan wheel shall be of the forward-curved centrifugal type and dynamically balanced.

- E. All fans shall bear the AMCA Certified Ratings program AMCA Air Performance Seal and shall be UL/cUL Listed.
- A. Provide direct belt driven centrifugal type roof mounted fans with capacities as indicated in the equipment schedules on the mechanical drawings. Fans complete with curb cap suitable for curb mounting. Roof curbs shall be provided by the HVAC Contractor.
- B. Fans housing shall be heavy gauge spun aluminum with gauges as listed in the following schedule, mounted to a rigid support network constructed of galvanized or epoxy coated steel. Fan housing shall have a rigid wire bird screen mounted to the unit discharge.
- Drive frame, bearing support, and motor support shall be heavy gauge galvanized steel.
- C. Fan inlet cone shall have a die spun hyperbolic shape, matched to the wheel cone to ensure full loading of fan blades to maximize efficiency.
- C. Fan wheel shall have single thickness backward inclined blades or true hollow airfoil shaped blades. Wheel characteristics shall be non-overloading.
- C. Fan inlet cone, wheel cone, blades and backplate shall be constructed of heavy gauge aluminum.
- C. Blades shall be welded, riveted or bolted to wheel cone and backplate.
- C. Wheel shall be statically and dynamically balanced.
- C. Drive shaft shall be ground and polished high grade steel supported by permanently lubricated sealed ball bearings housed in a cast iron flanged mounted housing.
- C. Bearings shall be sized for a minimum L-10 life of 100,000 hours at maximum fan operating conditions including belt pull. Bearings shall be selected in accordance with standards set forth by the Anti-Friction Bearing Mfrs. Assn.
- C. Drives shall be sized for a minimum of 1.65 times the fan motor horsepower. Sheaves shall be adjustable and have a tapered split and keyed hub. Belts shall be oil resistant 24,000-hour non-static type.

D. Motor and drive assembly shall be mounted on neoprene vibration isolators.

Motor, drive, and bearings shall be out of the exhaust airstream and housed to facilitate ease of maintenance. Motor cooling shall be through the fan drive and motor housings.

E. Motor shall be wired to a factory installed disconnect switch. All wiring and electrical components shall comply with the National Electric Code and be UL listed.

E. Motors shall be TEFC in accordance with the Motor Section of the Special Conditions.

E. Provide automatic damper. Damper to open when fan is energized and close when fan is de-energized. See Sheet Metal Section for damper specification.

E. Damper to be field installed in duct at fan inlet.

E. All fasteners shall be stainless steel.

F. Refer to Roof Curbs Section.

2.11 ROOF CURBS

. General

0. Provide roof curbs for sheet metal duct penetration roof mounted fans, gravity intake, exhaust and relief hoods of types and sizes as shown on the drawings and as hereinafter specified. Roof curbs shall be as manufactured by the approved fan or hood manufacturer.
0. Refer to other Sections of this specification and Section 15000 for General Requirements and Conditions.
0. Roof curbs shall be suitable for field flashing by the Contractor.

. Materials

0. Roof Curbs

Roof curbs shall be prefabricated, acoustical type, constructed of 16-gauge aluminum, preinsulated with insulation protected from erosion.

Roof curbs shall be supplied by the fan manufacturer.

- A. If the fan manufacturer does not supply the roof curb as indicated in writing on their letterhead, the acceptable Manufacturers subject to compliance with the specification shall be:
 - 1. Roof Curbs:
 - a. Loren Cook Co.
 - a. Greenheck
Thycurb
 - a. Or approved equal

PART 3 - FAN INSTALLATION REQUIREMENTS

3.01 INSTALLATION

- A. Fans shall be installed in accordance with manufacturer recommendations, Contract Drawings and reviewed submittals.
- B. Fans shall be installed so as to ensure easy accessibility for service or removal or replacement of all components such as, but not limited to, fans, motors, belts, drives, bearings, dampers, actuators, isolators, and field connections.
- C. The HVAC Contractor shall install all motors and drives shipped loose. Fans shall be installed and tested, and shall be made fully operational by the HVAC Contractor.
- D. Provide fixed sheaves as necessary for final air balancing. The Contractor shall install the fixed sheave after balancing with the Contractor to adjust the fans.
- E. Manufacturer shall include the adjustment of pitch for adjustable pitch fans as required by balancing.
- F. Set roof mounted fans on sound absorbing insulated curbs. Coordinate installation with Roofing Contractor. Curbs shall be provided by the HVAC Contractor. The HVAC Contractor shall provide all counter flashing.

- G. Mount vent sets and vane axial fans located on roof to inertia bases as required under Vibration Isolation Section.
- H. Make all penetrations through roof or vertical walls watertight. Submit methods of sealing to Architect/Engineer for review and approval.
- I.F. All fans shall have flexible inlet and outlet couplings to prevent vibration transmission to ductwork.
- J.G. The Contractor shall assemble all loose parts including motors and drive assemblies on site and shall vibration balance the fans in the field. Field adjustment including belt alignment, wheel balancing, belt tension, greasing of bearings, installation of belt guards, and other loose parts shall be provided by the HVAC Contractor.

3.02 COORDINATION

- A. The Contractor shall coordinate the fan arrangement with the coordinated ductwork layout prior to ordering the fan. The Contractor shall provide all labor and materials necessary to change fan arrangement in the field when fan arrangement does not match ductwork.
- B. The inlet and/or discharge ductwork shall have a minimum straight run of (2) fan diameters upstream and downstream of the fan. The Contractor shall notify the Engineer in writing if these conditions cannot be achieved. Installation of improper inlet/discharge conditions without the review of the Engineer shall be corrected in the field at no cost to the Owner.
- C. The discharge duct arrangement shall comply with AMCA recommended layouts for elbows after fans.
- D.C. The Contractor shall provide all supplemental steel, supports, rods and hangers necessary to hang or mount fans. Supports shall include thrust restraint as required by the fan manufacturer.
- E.D. The fan manufacturer and Contractor shall coordinate the fan orientation for tubular centrifugal fans and shall verify that the fan support and bearings are supplied for the coordinated fan orientation (horizontal or vertical). The Contractor shall revise the fan in the field if job conditions require changing of orientation, at no cost to the Owner.

- F.E. The Contractor shall receive and inspect all fans and motors to make sure that all fans are received without defect. All defective or damaged fans shall be returned to the manufacturer by the Contractor for replacement.
- G.F. The Contractor shall properly protect all equipment to prevent damage from water, dirt, etc. Protection shall include temporary plastic wrap to keep equipment in original factory condition. Fans used for temporary ventilation during construction shall be totally cleaned and refurbished prior to turnover to the Owner.
- H.G. The HVAC Contractor shall mount and vibration balance all fans. The Electrical Contractor shall furnish and install power wiring to the fan motor and verify proper fan rotation. The HVAC and Electrical Contractors shall coordinate the starter requirements to ensure that the proper starter is installed for non-standard motors. The ATC Contractor shall wire all interlocking wiring to the fan including smoke detector wiring for fan shutdown.
- I.H. The HVAC Contractor shall mount all automatic control dampers on the fan either shipped loose or provided by the ATC Contractor.
- J.I. The HVAC Contractor shall mount all field mounted flow measuring devices on the inlet or discharge of the fan prior to fan installation.

END OF SECTION 233900

SECTION 238126 - SPLIT-SYSTEM AIR-CONDITIONERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes split-system air-conditioning and heat pump units consisting of separate evaporator-fan and compressor-condenser components. Units are designed for exposed or concealed mounting, and may be connected to ducts.

1.03 SUBMITTALS

- A. Examine all drawings and criteria sheets and all other Sections of the Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this Section.
- B. Product Data: Include rated capacities, furnished specialties, and accessories for each type of product indicated. Include performance data in terms of capacities, outlet velocities, static pressures, sound power characteristics, motor requirements, and electrical characteristics.
- C. Shop Drawings: Diagram power, signal, and control wiring.
- D. Samples for Initial Selection: For units with factory-applied color finishes.
- E. Retain first paragraph below if Contractor is responsible for field quality-control testing.
- F.E. Field quality-control test reports.
- G.F. Operation and Maintenance Data: For split-system air-conditioning units to include in emergency, operation, and maintenance manuals.
- H.G. Warranty: Special warranty specified in this Section.

~~Reinforcing steel shall be of the type specified in Part 2 of Division 05.~~

LEED Submittals:

0. Credit EA 4: Manufacturers' product data for refrigerants, including printed statement that refrigerants are free of HCFCs.

1.071.04 QUALITY ASSURANCE

- A. Product Options: Drawings indicate size, profiles, and dimensional requirements of split-system units and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements."
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Energy-Efficiency Ratio: Equal to or greater than prescribed by ASHRAE 90.1, "Energy Efficient Design of New Buildings except Low-Rise Residential Buildings."
- D. Coefficient of Performance: Equal to or greater than prescribed by ASHRAE 90.1, "Energy Efficient Design of New Buildings except Low-Rise Residential Buildings."
- E. ~~Unit EA 4: Manufacturers' product data for refrigerants, including printed statement that refrigerants are free of HCFCs.~~
- F.E. Units shall be designed to operate with HCFC-free refrigerants.

1.081.05 COORDINATION

~~Reinforcing steel shall be of the type specified in Part 2 of Division 05.~~

- Coordinate size and location of concrete bases for units. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork are specified in Division 03 Section "Cast-in-Place Concrete."
- Coordinate size, location, and connection details with roof curbs, equipment supports, and roof penetrations specified in Division 07 Section "Roof Accessories."

1.121.06 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of split-system air-conditioning units that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

1.13 EXTRA MATERIALS

- A. Extra materials may not be allowed for publicly funded projects.

Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

0. Filters: One set of filters for each unit.

0. Fan Belts: One set of belts for each unit.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Mitsubishi Heavy Industries America, Inc.; Air-Conditioning & Refrigeration Division, Inc.
2. Sanyo Fisher (U.S.A.) Corp..
3. LG Corporation
4. Daikin Corporation
5. Trane Company (The); Unitary Products Group.
6. York International Corp.

2.02 CONCEALED EVAPORATOR-FAN COMPONENTS

- . All Fan drives shall be direct drive unless specifically indicated otherwise or direct drive fans are unavailable as demonstrated by contractor and approved by the owner in writing.
- . All fans shall be provided with variable speed (frequency) drives where fan motors are 3 phase. Where fan motors are single phase, the fans shall be provided with speed controllers with all required wiring modifications.

2.05 FLOOR-MOUNTING, EVAPORATOR-FAN COMPONENTS

- . Cabinet: Enameled steel with removable panels on front and ends in color selected by Architect.
 - 0. Discharge Grille: Welded steel bars forming a linear grille and welded into supporting panel.
 - 0. Insulation: Faced, glass-fiber, duct liner.
 - 0. Drain Pans: Galvanized steel, with connection for drain; insulated.
- . Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with thermal-expansion valve.
- . Retain one of first two paragraphs below if heating is required.
- . Water Coil: Copper tube, with mechanically bonded aluminum fins spaced no closer than 0.1 inch (2.5 mm); leak tested to 300 psig (2070 kPa) underwater; and having a 2-position control valve.
- . Electric Coil: Helical, nickel-chrome, resistance-wire heating elements with refractory ceramic support bushings; automatic-reset thermal cutout; built-in magnetic contactors; manual-reset thermal cutout; airflow proving device; and one-time fuses in terminal box for overcurrent protection.
- . Fan: Direct drive, centrifugal
- . Motor characteristics such as NEMA designation, temperature rating, service factor, enclosure type, and efficiency are specified in Division 23 Section "Common Motor Requirements for HVAC Equipment." If different characteristics are required, add paragraphs below to suit Project.

- . Fan Motors: Comply with requirements in Division 23 Section "Common Motor Requirements for HVAC Equipment."
- 0. Special Motor Features: Multitapped, multispeed with internal thermal protection and permanent lubrication.
- . LEED Credit EQ 3.1 requires minimum MERV-13 filters. Verify availability of MERV-13 filters with rooftop unit manufacturers.
- . Filters: Permanent, cleanable.

2.202.02 WALL-MOUNTING, EVAPORATOR-FAN COMPONENTS

- A. Cabinet: Enameled steel with removable panels on front and ends in color selected by Architect, and discharge drain pans with drain connection.
- B. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with thermal-expansion valve.
- C. Retain first paragraph below for heat pump units and supplemental electric heat.
- D. Electric Coil: Helical, nickel-chrome, resistance-wire heating elements with refractory ceramic support bushings; automatic-reset thermal cutout; built-in magnetic contactors; manual-reset thermal cutout; airflow proving device; and one-time fuses in terminal box for overcurrent protection.
- E.C. Fan: Direct drive, centrifugal fan.
- F.D. Motor characteristics such as NEMA designation, temperature rating, service factor, enclosure type, and efficiency are specified in Division 23 Section "Common Motor Requirements for HVAC Equipment." If different characteristics are required, add paragraphs below to suit Project.
- G.E. Fan Motors: Comply with requirements in Division 23 Section "Common Motor Requirements for HVAC Equipment."
- 1. Special Motor Features: Multitapped, multispeed with internal thermal protection and permanent lubrication.
- H. LEED Credit EQ 3.1 requires minimum MERV-13 filters. Verify availability of MERV-13 filters with rooftop unit manufacturers.

F. Filters: Permanent, cleanable.

- . Leak sensor: UL508 listed, Field install leak sensor for the primary drain pan manufacturer provide leak sensor meets MCNYS 307.2.3.

2.22 CEILING-MOUNTING, EVAPORATOR-FAN COMPONENTS

- . Cabinet: Enameled steel with removable panels on front and ends in color selected by Architect, and discharge drain pans with drain connection.
- . Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with thermal-expansion valve.
- . Retain first paragraph below for heat pump units and supplemental electric heat.
- . Electric Coil: Helical, nickel-chrome, resistance-wire heating elements with refractory ceramic support bushings; automatic-reset thermal cutout; built-in magnetic contactors; manual-reset thermal cutout; airflow proving device; and one-time fuses in terminal box for overcurrent protection.
- . Fan: Direct drive, centrifugal fan and integral condensate pump.
- . Motor characteristics such as NEMA designation, temperature rating, service factor, enclosure type, and efficiency are specified in Division 23 Section "Common Motor Requirements for HVAC Equipment." If different characteristics are required, add paragraphs below to suit Project.
- . Fan Motors: Comply with requirements in Division 23 Section "Common Motor Requirements for HVAC Equipment."
- 0. Special Motor Features: Multitapped, multispeed with internal thermal protection and permanent lubrication.
- . LEED Credit EQ 3.1 requires minimum MERV-13 filters. Verify availability of MERV-13 filters with rooftop unit manufacturers.
- . Filters: Permanent, cleanable.

2.332.03 AIR-COOLED, COMPRESSOR-CONDENSER COMPONENTS

- A. Casing: Steel, finished with baked enamel in color selected by Architect, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
 - B. Compressor: Hermetically sealed with crankcase heater and mounted on vibration isolation. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.
 - 1. Compressor Type: Inverter-driven twin rotary Scroll.
 - 2. Feature in subparagraph below is not available from all manufacturers.
 - 3. Two-speed compressor motor with manual-reset high-pressure switch and automatic-reset low-pressure switch.
 - 4. LEED Credit EA 4 awards a single point if all HVAC&R equipment has HCFC-free refrigerant. R-407C and R-410A are HCFC-free refrigerants.
 - 5.2. Refrigerant Charge: R-410A
 - C. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with liquid subcooler.
 - D. Retain first paragraph below for heat pump units.
 - E. Heat Pump Components: Reversing valve and low-temperature air cut-off thermostat.
 - F.D. Fan: Aluminum-propeller type, directly connected to motor.
 - G.E. Motor: Permanently lubricated, with integral thermal-overload protection.
 - H.F. Low Ambient Kit: Permits operation down to 45 -15 deg F (-267 deg C).
 - I.G. Mounting Base: Polyethylene.
- 2.34 WATER-COOLED, COMPRESSOR-CONDENSER COMPONENTS
- . Casing: Steel, with baked-enamel finish in color selected by Architect, removable panels for access to controls, and

mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.

- . Compressor: Hermetically sealed with crankcase heater and mounted on vibration isolation. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.

0. Compressor Type: Scroll.

0. Feature in subparagraph below is not available from all manufacturers.

0. Two-speed compressor motor with manual-reset high-pressure switch and automatic-reset low-pressure switch.

0. LEED Credit EA 4 awards a single point if all HVAC&R equipment has HCFC-free refrigerant. R-407C and R-410A are HCFC-free refrigerants.

0. Refrigerant Charge: R-410A

- . Retain first paragraph below for heat pump units.

- . Heat Pump Components: Reversing valve.

- . Heat Exchanger: Copper tubes in copper tube or in steel shell, with water-temperature-actuated, water-regulating valve.

2.452.04 ACCESSORIES

- A. Control equipment and sequence of operation are specified in Division 23 Sections "Instrumentation and Control for HVAC" and "Sequence of Operations for HVAC Controls."section 230900.

- B. Retain paragraph above if controls are part of overall temperature control system, or one of first two paragraphs and associated subparagraphs below.

- B. Thermostat: Low voltage with subbase to control compressor and evaporator fan, with the following features:.

1. Compressor time delay.

2. 24-hour time control of system stop and start.

3. Liquid-crystal display indicating temperature, set-point temperature, time setting, operating mode, and fan speed.
 4. Fan-speed selection, including auto setting.
- C.
- D. Thermostat: Wireless infrared functioning to remotely control compressor and evaporator fan, with the following features:
0. Compressor time delay.
 0. 24-hour time control of system stop and start.
 0. Liquid-crystal display indicating temperature, set-point temperature, time setting, operating mode, and fan speed.
 0. Fan-speed selection, including auto setting.
- I.C. Automatic-reset timer to prevent rapid cycling of compressor.
- D. Refrigerant Line Kits: Soft-annealed copper suction and liquid lines factory cleaned, dried, pressurized, and sealed; factory-insulated suction line with flared fittings at both endspiping.: See section 232000
- E. Condensate Pump: The evaporator drain pan shall be provided with the AC Unit manufacturer supplied integral condensate pump where required as per contract drawing equipment schedules Condensate pumps shall be internally wired to the evaporator control for single point electrical power to the evaporator unit as well as for controls such that the evaporator unit shall shut down in the event the condensate pump fails and shall trigger an alarm at the BMS system.
- F. Control Interface: Provide BACNET and Modbus Compatible interface for building BMS integration. Auxiliary Drain Pan Under the Evaporator Unit of 10 Gage Aluminum with UL 508 listed Leak Sensor meeting Mechanical Code of NYS 307.2.3 requirements for operation and control.
- J.G. Control Interface: Provide BACNET Compatible interface for building BMS integration. Unit controls shall be fully compatible with the Building Controls Manufacturer for seamless integration. The AC equipment manufacturer shall

coordinate with the Contractor to integrate the factory controls with the Building Management System (BMS).

LEED Credit EA 5 requires continuous metering equipment for monitoring building energy consumption performance over time. Retain paragraph and subparagraphs below if required to comply with the requirements for this credit. Verify availability of control features with unit manufacturers.

K. Additional Monitoring:

- 0. Monitor constant and variable motor loads.
- 0. Monitor variable frequency drive operation.
- 0. Monitor economizer cycle.
- 0. Monitor cooling load.
- 0. Monitor air distribution static pressure and ventilation air volumes.

PART 3 - FAN INSTALLATION REQUIREMENTS

3.01 INSTALLATION

- A. Install units level and plumb.
- B. Install evaporator-fan components using manufacturer's standard wall-mounting devices securely fastened to building structure.
- C. Install ground-mounting, compressor-condenser components on 4-inch- (100-mm-) thick, reinforced concrete base; 4 inches (100 mm) larger on each side than unit. Concrete, reinforcement, and formwork are specified in Division 03 Section "Cast-in-Place Concrete." Coordinate anchor installation with concrete base.
- D. Retain paragraph above or first paragraph below.
- E. Install equipment as shown on drawing and as per manufacture recommendations. ground-mounting, compressor-condenser components on polyethylene mounting base.
- C. Install roof-mounting compressor-condenser components on equipment supports specified in Division 07 Section "Roof Accessories." Anchor units to supports with removable, cadmium-plated fasteners.

- D. BMS shall enable/disable, adjust setpoint, and monitor alarms, space temp and status.
 - . 12 gauge 304 Stainless steel perforated channel and strut structure with adjustable height and rubber base. Adjustable height shall be minimum 12" from top of roof membrane.
 - . Retain first paragraph below if Project is in a seismic area.
 - . Install seismic restraints.
 - . Install compressor-condenser components on restrained, spring isolators with a minimum static deflection of 1 inch (25 mm). Refer to Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment."
 - . Install and connect precharged refrigerant tubing to component's quick-connect fittings. Install tubing to allow access to unit.

3.073.02 CONNECTIONS

- A. Piping installation requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
 - 0. Retain subparagraph below for units with hot-water coils.
 - 0. Water Coil Connections: Comply with requirements in Division 23 Section "Hydronic Piping." Connect to supply and return coil with shutoff-duty valve and union or flange on the supply connection and with throttling-duty valve and union or flange on the return connection.
 - 0. Retain subparagraph below for units with remote water-cooled condenser.
 - 0. Remote Water-Cooled Condenser Connections: Comply with requirements in Division 23 Section "Hydronic Piping." Connect to supply and return with shutoff-duty valve and union or flange on the supply connection and with throttling-duty valve and union or flange on the return connection.
 - 0. Retain subparagraph below for units with steam coils.

- 0. Steam Coil Connections: Comply with requirements in Division 23 Section "Steam and Condensate Heating Piping." Connect to steam piping with shutoff valve and union or flange; for condensate piping, starting from the coil connection, connect with union or flange, strainer, trap, and shutoff valve.
 - H.B. Install piping adjacent to unit to allow service and maintenance.
 - I. Retain first paragraph below for units connected to ducts. Coordinate duct installation requirements with schematics on Drawings and with requirements specified for duct systems. If Drawings are explicit enough, these requirements may be reduced or omitted.
 - J. Duct Connections: Duct installation requirements are specified in Division 23 Section "Metal Ducts." Drawings indicate the general arrangement of ducts. Connect supply and return ducts to split-system air-conditioning units with flexible duct connectors. Flexible duct connectors are specified in Division 23 Section "Air Duct Accessories."
 - K.C. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."
 - L.D. Electrical Connections: Comply with requirements in Division 26 Sections for power wiring, switches, and motor controls.
- 3.083.03 FIELD QUALITY CONTROL
- A. Retain first paragraph below to require a factory-authorized service representative to perform, or assist Contractor with, field inspections, tests, and adjustments. Retain one of two options to suit Project; delete both to require only an inspection before field testing.
 - B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect , test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.
 - C.A. Perform the following field tests and inspections and prepare test reports:

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 motor rotation and unit operation.
 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D.B. Remove and replace malfunctioning units and retest as specified above.

3.09 STARTUP SERVICE

- . Delete this Article if factory-authorized service representative is not required.
- . Engage a factory-authorized service representative to perform startup service.
- 0. Complete installation and startup checks according to manufacturer's written instructions.

3.133.04 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain units
- A.B. The manufacturer shall coordinate with the contractor to integrate the factory controls with the BMS. BMS shall enable/disable, adjust setpoint, and monitor alarms, space temp and status.. Refer to Division 01 Section "Demonstration and Training."

END OF SECTION 23 81 26

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SECTION 26 05 00 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sleeves for raceways and cables.
2. Sleeve seals.
3. Grout.
4. Common electrical installation requirements.

1.2 SUBMITTALS

A. Product Data: For sleeve seals.

PART 2 - PRODUCTS

2.1 SLEEVES FOR RACEWAYS AND CABLES

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Sleeves for Rectangular Openings: Galvanized sheet steel.

1. Minimum Metal Thickness:

- a. For sleeve cross-section rectangle perimeter less than 50 inches and no side more than 16 inches, thickness shall be 0.052 inch.
- b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches and 1 or more sides equal to, or more than, 16 inches, thickness shall be 0.138 inch.

2.2 SLEEVE SEALS

- A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Advance Products & Systems, Inc.

- b. Calpico, Inc.
 - c. Metraflex Co.
 - d. Pipeline Seal and Insulator, Inc.
 - e. Approved equal
- 2. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
 - 3. Pressure Plates: Stainless steel. Include two for each sealing element.
 - 4. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.3 GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

- A. Comply with NECA 1.
- B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.
- C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.
- D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
- E. Right of Way: Give to piping systems installed at a required slope.

3.2 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- E. Cut sleeves to length for mounting flush with both surfaces of walls.
- F. Extend sleeves installed in floors 2 inches above finished floor level.
- G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.
- H. Seal space outside of sleeves with grout for penetrations of concrete and masonry
 - 1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.
- I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants."
- J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with requirements in Division 07 Section "Penetration Firestopping."
- K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
- L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select

sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

- M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.3 SLEEVE-SEAL INSTALLATION

- A. Install to seal exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.4 FIRESTOPPING

- A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

END OF SECTION 26 05 00

SECTION 26 05 19 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Building wires and cables rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.
3. Sleeves and sleeve seals for cables.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Field quality-control test reports.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Alcan Products Corporation; Alcan Cable Division.
 2. American Insulated Wire Corp.; a Leviton Company.
 3. General Cable Corporation.
 4. Senator Wire & Cable Company.
 5. Southwire Company.
- B. Copper Conductors: Comply with NEMA WC 70.
- C. Conductor Insulation: Comply with NEMA WC 70 for Types THHN-THWN.

2.2 CONNECTORS AND SPLICES

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. AFC Cable Systems, Inc.
 2. Hubbell Power Systems, Inc.
 3. O-Z/Gedney; EGS Electrical Group LLC.
 4. 3M; Electrical Products Division.
 5. Tyco Electronics Corp.
 6. Approved equal
- B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.3 SLEEVES FOR CABLES

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- C. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.2 CONDUCTOR INSULATION, APPLICATIONS AND WIRING METHODS

- A. Exposed Feeders: Type THHN-THWN, single conductors in raceway.
- B. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Type THHN-THWN, single conductors in raceway.

- C. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.
- D. Exposed Branch Circuits, Including in Crawlspace: Type THHN-THWN, single conductors in raceway.
- E. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.
- F. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.
- G. Class 1 Control Circuits: Type THHN-THWN, in raceway.
- H. Class 2 Control Circuits: Type THHN-THWN, in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- E. Support cables according to Division 26 Sections "Hangers and Supports for Electrical Systems."
- F. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."
- G. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- H. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
- I. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches of slack.

3.4 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- D. Cut sleeves to length for mounting flush with both wall surfaces.
- E. Extend sleeves installed in floors 2 inches above finished floor level.
- F. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and cable unless sleeve seal is to be installed or unless seismic criteria require different clearance.
- G. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.
- H. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and cable, using joint sealant appropriate for size, depth, and location of joint according to Division 07 Section "Joint Sealants."
- I. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at cable penetrations. Install sleeves and seal with firestop materials according to Division 07 Section "Penetration Firestopping."
- J. Roof-Penetration Sleeves: Seal penetration of individual cables with flexible boot-type flashing units applied in coordination with roofing work.
- K. Aboveground Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeves to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- L. Underground Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch annular

clear space between cable and sleeve for installing mechanical sleeve seals.

3.5 SLEEVE-SEAL INSTALLATION

- A. Install to seal underground exterior-wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for cable material and size. Position cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.6 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Division 07 Section "Penetration Firestopping."

3.7 FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.
- B. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
- C. Test Reports: Prepare a written report to record the following:
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.
 - 3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.
- D. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION 26 05 19

SECTION 26 05 26 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes methods and materials for grounding systems and equipment.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Field quality-control test reports.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.1 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B 3.
 - 2. Stranded Conductors: ASTM B 8.
 - 3. Tinned Conductors: ASTM B 33.
 - 4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.
 - 5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
 - 6. Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

2.2 CONNECTORS

- A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.
 - 1. Pipe Connectors: Clamp type, sized for pipe.
- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

PART 3 - EXECUTION

3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger, unless otherwise indicated.
- B. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.
- C. Conductor Terminations and Connections:
 - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
 - 2. Connections to Structural Steel: Welded connectors.

3.2 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
 - 1. Feeders and branch circuits.
 - 2. Lighting circuits.
 - 3. Receptacle circuits.
 - 4. Single-phase motor and appliance branch circuits.
 - 5. Three-phase motor and appliance branch circuits.
 - 6. Flexible raceway runs.

3.3 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.
 - 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
 - 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.
 - 3. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.

END OF SECTION 26 05 26

SECTION 26 05 29 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Hangers and supports for electrical equipment and systems.
2. Construction requirements for concrete bases.

1.2 PERFORMANCE REQUIREMENTS

- A. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- C. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.3 SUBMITTALS

- A. Product Data: For steel slotted support systems.

1.4 QUALITY ASSURANCE

- A. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. Allied Tube & Conduit.
 - b. Cooper B-Line, Inc.; a division of Cooper Industries.
 - c. ERICO International Corporation.
 - d. GS Metals Corp.
 - e. Thomas & Betts Corporation.
 - f. Unistrut; Tyco International, Ltd.
 - g. Wesanco, Inc.
 - h. Approved equal.
2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 3. Channel Dimensions: Selected for applicable load criteria.
- B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- C. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.
- E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) Hilti Inc.
 - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 3) MKT Fastening, LLC.
 - 4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.
 - 5) Approved Equal.

2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) Cooper B-Line, Inc.; a division of Cooper Industries.
 - 2) Empire Tool and Manufacturing Co., Inc.
 - 3) Hilti Inc.
 - 4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 5) MKT Fastening, LLC.
 - 6) Approved Equal.
3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Division 05 Section "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.

- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

- 1. Secure raceways and cables to these supports with two-bolt conduit clamps.

3.2 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

- B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, and RMC may be supported by openings through structure members, as permitted in NFPA 70.

- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

- 1. To Wood: Fasten with lag screws or through bolts.
 - 2. To New Concrete: Bolt to concrete inserts.
 - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 - 4. To Existing Concrete: Expansion anchor fasteners.
 - 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
 - 6. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
 - 7. To Light Steel: Sheet metal screws.
 - 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.

- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Comply with installation requirements in Division 05 Section "Metal Fabrications" for site-fabricated metal supports.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated but not less than 4 inches larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use 3000-psi, 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Division 03 Section "Cast-in-Place Concrete."
- C. Anchor equipment to concrete base.
 - 1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
 - 3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.5 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 26 05 29

SECTION 26 05 33 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

1.2 SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, details, and attachments to other work.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND TUBING

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. AFC Cable Systems, Inc.
 - 2. Alflec Inc.
 - 3. Allied Tube & Conduit; a Tyco International Ltd. Co.
 - 4. Anamet Electrical, Inc.; Anaconda Metal Hose.
 - 5. Electri-Flex Co.
 - 6. Manhattan/CDT/Cole-Flex.
 - 7. Maverick Tube Corporation.
 - 8. O-Z Gedney; a unit of General Signal.
 - 9. Wheatland Tube Company.
- B. Rigid Steel Conduit: ANSI C80.1.

- C. EMT: ANSI C80.3.
- D. FMC: Zinc-coated steel.
- E. LFMC: Flexible steel conduit with PVC jacket.
- F. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.
 - 1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886.
 - 2. Fittings for EMT: Steel or die-cast, compression type.

2.2 BOXES, ENCLOSURES, AND CABINETS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
 - 2. EGS/Appleton Electric.
 - 3. Erickson Electrical Equipment Company.
 - 4. Hoffman.
 - 5. Hubbell Incorporated; Killark Electric Manufacturing Co. Division.
 - 6. O-Z/Gedney; a unit of General Signal.
 - 7. RACO; a Hubbell Company.
 - 8. Robroy Industries, Inc.; Enclosure Division.
 - 9. Scott Fetzer Co.; Adalet Division.
 - 10. Spring City Electrical Manufacturing Company.
 - 11. Thomas & Betts Corporation.
 - 12. Walker Systems, Inc.; Wiremold Company (The).
 - 13. Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.
- B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
- C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.
- D. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- E. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.
- F. Hinged-Cover Enclosures: NEMA 250, Type 3R, with continuous-hinge cover with flush latch, unless otherwise indicated.
 - 1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.

G. Cabinets:

1. NEMA 250, Type 3R, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:

1. Exposed Conduit: Rigid steel conduit.
2. Concealed Conduit, Aboveground: EMT.
3. Underground Conduit: Rigid steel conduit.
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.

- B. Comply with the following indoor applications, unless otherwise indicated:

1. Exposed, Not Subject to Physical Damage: EMT.
2. Exposed, Not Subject to Severe Physical Damage: EMT.
3. Exposed and Subject to Severe Physical Damage: Rigid steel conduit. Includes raceways in the following locations:
 - a. Loading dock.
 - b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
 - c. Mechanical rooms.
 - d. Garage areas.
 - e. Elevator machine rooms and hoistways.
4. Concealed in Ceilings and Interior Walls and Partitions: EMT.
5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
6. Damp or Wet Locations: Rigid steel conduit.
7. Raceways for Optical Fiber or Communications Cable: EMT.

8. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, stainless steel in damp or wet locations.

C. Minimum Raceway Size: 3/4-inch trade size.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.

3.2 INSTALLATION

A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.

B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Complete raceway installation before starting conductor installation.

D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."

E. Arrange stub-ups so curved portions of bends are not visible above the finished slab.

F. Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.

G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.

H. Raceways Embedded in Slabs:

1. Run conduit larger than 1-inch trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.

2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.

I. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.

J. Raceways for Optical Fiber and Communications Cable: Install as follows:

1. 3/4-Inch Trade Size and Smaller: Install raceways in maximum lengths of 50 feet.
2. 1-Inch Trade Size and Larger: Install raceways in maximum lengths of 75 feet.
3. Install with a maximum of two 90-degree bends or equivalent for each length of raceway unless Drawings show stricter requirements. Separate lengths with pull or junction boxes or terminations at distribution frames or cabinets where necessary to comply with these requirements.

K. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where otherwise required by NFPA 70.

L. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall.

3.3 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

END OF SECTION 26 05 33

SECTION 26 05 53 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Identification for conductors and communication and control cable.
 - 2. Warning labels and signs.
 - 3. Equipment identification labels.

1.2 SUBMITTALS

- A. Product Data: For each electrical identification product indicated.

1.3 QUALITY ASSURANCE

- A. Comply with ANSI A13.1.

1.4 COORDINATION

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in the Contract Documents, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual, and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.

PART 2 - PRODUCTS

2.1 CONDUCTOR AND COMMUNICATION- AND CONTROL-CABLE IDENTIFICATION MATERIALS

- A. Marker Tape: Vinyl or vinyl -cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

2.2 WARNING LABELS AND SIGNS

- A. Comply with NFPA 70 and 29 CFR 1910.145.

- B. Self-Adhesive Warning Labels: Factory printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment, unless otherwise indicated.
- C. Baked-Enamel Warning Signs: Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application. 1/4-inch grommets in corners for mounting. Nominal size, 7 by 10 inches.
- D. Metal-Backed, Butyrate Warning Signs: Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing; and with colors, legend, and size required for application. 1/4-inch grommets in corners for mounting. Nominal size, 10 by 14 inches.
- E. Fasteners for Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.
- F. Warning label and sign shall include, but are not limited to, the following legends:
 - 1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
 - 2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES (915 mm)."

2.3 EQUIPMENT IDENTIFICATION LABELS

- A. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Auxiliary Electrical Systems Conductor and Cable Identification: Use marker tape to identify field-installed alarm, control, signal, sound, intercommunications, voice, and data wiring connections.
 - 1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and cable pull points. Identify by system and circuit designation.
 - 2. Use system of designations that is uniform and consistent with system used by manufacturer for factory-installed connections.

- B. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Comply with 29 CFR 1910.145 and apply baked-enamel warning signs. Identify system voltage with black letters on an orange background. Apply to exterior of door, cover, or other access.
 - 1. Equipment with Multiple Power or Control Sources: Apply to door or cover of equipment including, but not limited to, the following:
 - a. Power transfer switches.
 - b. Controls with external control power connections.
 - 2. Equipment Requiring Workspace Clearance According to NFPA 70: Unless otherwise indicated, apply to door or cover of equipment but not on flush panelboards and similar equipment in finished spaces.
- C. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
 - 1. Labeling Instructions:
 - a. Indoor Equipment: Self-adhesive, engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- high letters on 1-1/2-inch- high label; where 2 lines of text are required, use labels 2 inches high.
 - b. Outdoor Equipment: Engraved, laminated acrylic or melamine label, drilled for screw attachment.
 - c. Elevated Components: Increase sizes of labels and legend to those appropriate for viewing from the floor.
 - 2. Equipment to Be Labeled:
 - a. Panelboards, electrical cabinets, and enclosures.
 - b. Electrical switchgear and switchboards.
 - c. Transformers.
 - d. Motor-control centers.
 - e. Disconnect switches.
 - f. Enclosed circuit breakers.
 - g. Motor starters.
 - h. Push-button stations.
 - i. Power transfer equipment.
 - j. Contactors.

3.2 INSTALLATION

- A. Verify identity of each item before installing identification products.

- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- E. Attach nonadhesive signs and plastic labels with screws and auxiliary hardware appropriate to the location and substrate.
- F. Color-Coding for Phase Identification, 600 V and Less: Use the colors listed below for ungrounded service, feeder, and branch-circuit conductors.
 - 1. Color shall be factory applied.
 - 2. Colors for 208/120-V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - c. Phase C: Blue.
 - 3. Colors for 480/277-V Circuits:
 - a. Phase A: Brown.
 - b. Phase B: Orange.
 - c. Phase C: Yellow.

END OF SECTION 26 05 53

SECTION 26 09 23 - LIGHTING CONTROL DEVICES

PART 2 - PART 1 - GENERAL

2.11.1 SUMMARY

- A. This Section includes the following lighting control devices:
 - 2.1. Indoor occupancy sensors.
- B. See Division 26 Section "Wiring Devices" for wall-box dimmers, wall-switch occupancy sensors, and manual light switches.

2.21.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Field quality-control test reports.
- C. Operation and maintenance data.

2.31.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 3 - PART 2 - PRODUCTS

3.1 INDOOR OCCUPANCY SENSORS

- . Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- . Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- . Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
 - 0. Hubbell Lighting.

- 0. Leviton Mfg. Company Inc.
- 0. Sensor Switch, Inc.
- 0. Watt Stopper .

2.1 WALL BOX OCCUPANCY/VACANCY SENSORS

- A. Line voltage PIR technology wall-switch sensors
 - 1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Lutron Electronics.
 - b. Hubbell Lighting
 - c. Leviton Mfg. Company Inc.
 - d. Sensor Switch, Inc.
 - e. Watt Stopper.
 - 2. Description: Line Voltage PIR Technology type, 120/230/277 VAC, adjustable time delay 1, 5, 15, or 30 minutes, 180-degree field of view, UL Listed with a minimum PIR coverage area of 30 ft. x 30 ft.
 - 3. Programmable as a Vacancy (manual ON/auto OFF) or Occupancy sensor (auto ON/auto OFF).
 - 4. Operating Environment: Operating temperature 32-104 degrees F with a relative humidity (non-condensing) of 0% to 95%.
- B. Finish: Color to be coordinated with the Architect from Manufacturer's standard colors.
- C. Warranty: 5 Years.
- A.D. General Description: Wall - or ceiling-mounting, solid-state units with a separate relay unit.
 - Retain subparagraphs and associated subparagraphs below to specify various types of units required for Project.
 - 2.1. Operation: Unless otherwise indicated, turn lights on when covered area is occupied and off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
 - 3. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Sensor shall be powered from the relay unit.
 - 4. Relay Unit: Dry contacts rated for 20-A ballast load at 120- and 277-V ac, for 13-tungsten at 120-V ac, and for 1 hp at 120-V ac. Power supply to sensor shall be 24-V dc, 150-mA, Class 2 power source as defined by NFPA 70.
 - 5.2. Mounting:
 - a. Sensor: Suitable for mounting in any position on a standard outlet box.
 - b. Relay: Externally mounted through a 1/2-inch (13-mm) knockout in a standard electrical enclosure.

- c. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.
 - 6.3. Indicator: LED, to show when motion is being detected during testing and normal operation of the sensor.
 - 4. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc (21.5 to 2152 lx); keep lighting off when selected lighting level is present.
- 0.
- . PIR Type: Ceiling mounting; detect occupancy by sensing a combination of heat and movement in area of coverage.
0. Detector Sensitivity: Detect occurrences of 6-inch-minimum movement of any portion of a human body that presents a target of not less than 36 sq. in. (232 sq. cm).
0. Detection Coverage (Room): Detect occupancy anywhere in a circular area of 1000 sq. ft. (93 sq. m) when mounted on a 96-inch- (2440-mm-) high ceiling.
0. Detection Coverage (Corridor): Detect occupancy within 90 feet (27.4 m) when mounted on a 10-foot- (3-m-) high ceiling.
- . Ultrasonic Type: Ceiling mounting; detect occupancy by sensing a change in pattern of reflected ultrasonic energy in area of coverage.
0. Detector Sensitivity: Detect a person of average size and weight moving not less than 12 inches in either a horizontal or a vertical manner at an approximate speed of 12 inches/s).
0. Detection Coverage (Small Room): Detect occupancy anywhere within a circular area of 600 sq. ft. when mounted on a 96-inch- high ceiling.
0. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. when mounted on a 96-inch- high ceiling.
0. Detection Coverage (Large Room): Detect occupancy anywhere within a circular area of 2000 sq. ft. when mounted on a 96-inch- high ceiling.
0. Detection Coverage (Corridor): Detect occupancy anywhere within 90 feet when mounted on a 10-foot- high ceiling in a corridor not wider than 14 feet .
- . Dual-Technology Type: Ceiling mounting; detect occupancy by using a combination of PIR and ultrasonic detection methods in area of coverage. Particular technology or combination of technologies that controls on-off functions shall be selectable in the field by operating controls on unit.

0. Sensitivity Adjustment: Separate for each sensing technology.

0. Detector Sensitivity: Detect occurrences of 6-inch-minimum movement of any portion of a human body that presents a target of not less than 36 sq. in. , and detect a person of average size and weight moving not less than 12 inches in either a horizontal or a vertical manner at an approximate speed of 12 inches/s .

0. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. when mounted on a 96-inch- high ceiling.

Low voltage switches for the occupant sensors, vacancy mode (Manual 'On') shall be compatible with and approved by the sensor manufacturer.

2.222.2 CONDUCTORS AND CABLES

- A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG. Comply with requirements in Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."
- B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 18 AWG. Comply with requirements in Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."
- C. Class 1 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 16 AWG. Comply with requirements in Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

PART 4 - PART 3 - EXECUTION

4.13.1 SENSOR INSTALLATION

- A. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.
- B. When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting sensors to suit actual occupied conditions. Provide up to two visits to Project during other than normal occupancy hours for this purpose.

4.23.2 WIRING INSTALLATION

- B.A. Wiring Method: Comply with Division 26 Section "Low-Voltage Electrical Power Conductors and Cables." Minimum conduit size shall be 3/4 inch (13 mm).
- C.B. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.
- D.C. Size conductors according to lighting control device manufacturer's written instructions, unless otherwise indicated.
- E.D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

4.33.3 IDENTIFICATION

Identify components and power and control wiring according to Division 26 Section "Identification for Electrical Systems."

- A.
 - 1. Identify circuits or luminaries controlled by occupancy sensors at each sensor.

4.43.4 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
 - 1. After installing sensors, and after electrical circuitry has been energized, adjust and test for compliance with requirements.
 - 2. Operational Test: Verify operation of each lighting control device , and adjust time delays.
- B. Lighting control devices that fail tests and inspections are defective work.

END OF SECTION 260923

SECTION 26 24 16 - PANELBOARDS

PART 1 - GENERAL:

1.1 SUMMARY:

- A. Section includes distribution panelboards and lighting and appliance branch-circuit panelboards.

1.2 SUBMITTALS:

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each panelboard and related equipment.
 - 1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
 - 2. Detail enclosure types and details for types other than NEMA 250, Type 1.
 - 3. Detail bus configuration, current, and voltage ratings.
 - 4. Short-circuit current rating of panelboards and overcurrent protective devices.
 - 5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
 - 6. Include wiring diagrams for power, signal, and control wiring.
 - 7. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards.
- C. Field quality-control reports.
- D. Panelboard schedules for installation in panelboards.
- E. Operation and maintenance data.

1.3 QUALITY ASSURANCE:

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NEMA PB 1.
- C. Comply with NFPA 70.

1.4 WARRANTY:

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PANELBOARDS:

- A. Enclosures: Surface-mounted cabinets.
 1. Rated for environmental conditions at installed location.
 - a. Indoor Dry and Clean Locations: NEMA 250, Type 1.
 - b. Outdoor Locations: NEMA 250, Type 3R.
 - c. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.
 2. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.
 3. Directory Card: Inside panelboard door, mounted in transparent card holder.
- B. Incoming Mains Location: Top and bottom.
- C. Phase, Neutral, and Ground Buses: Hard-drawn copper, 98 percent conductivity.
- D. Conductor Connectors: Suitable for use with conductor material and sizes.
 1. Material: Hard-drawn copper, 98 percent conductivity.
 2. Main and Neutral Lugs: Mechanical type.
 3. Ground Lugs and Bus Configured Terminators: Mechanical type.
 4. Feed-Through Lugs: Mechanical type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
 5. Subfeed (Double) Lugs: Mechanical type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.
- E. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.
- F. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.2 DISTRIBUTION PANELBOARDS:

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit;
 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution;
 3. Siemens Energy & Automation, Inc.;
 4. Square D; a brand of Schneider Electric;
 5. Or approved equal.
- B. Panelboards: NEMA PB 1, power and feeder distribution type.
- C. Doors: Secured with vault-type latch with tumbler lock; keyed alike.
- D. Mains: As noted on the drawings.
- E. Branch Overcurrent Protective Devices: For Circuit-Breaker Frame Sizes 125 A and Smaller: Bolt-on circuit breakers.
- F. Branch Overcurrent Protective Devices: For Circuit-Breaker Frame Sizes Larger Than 125 A: Bolt-on circuit breakers; plug-in circuit breakers where individual positive-locking device requires mechanical release for removal.
- G. Branch Overcurrent Protective Devices: Fused switches.
- 2.3 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS:
- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 3. Siemens Energy & Automation, Inc.
 4. Square D; a brand of Schneider Electric.
 5. Or approved equal.
- B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
- C. Mains: As noted on the drawings.
- D. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
- E. Contactors in Main Bus: NEMA ICS 2, Class A, mechanically held, general-purpose controller, with same short-circuit interrupting rating as panelboard.
1. External Control-Power Source: 120-V branch circuit.
- F. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

2.4 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES:

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; a brand of Schneider Electric.
 - 5. Or approved equal.
- B. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.
 - 1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
 - 2. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).
 - 3. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:
 - a. Standard frame sizes, trip ratings, and number of poles.
 - b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
 - c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.
 - d. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
 - e. Shunt Trip: 120-V trip coil energized from separate circuit, set to trip at 75 percent of rated voltage.
 - f. Undervoltage Trip: Set to operate at 35 to 75 percent of rated voltage with field adjustable 0.1- to 0.6-second time delay.
 - g. Handle Padlocking Device: Fixed attachment, for locking circuit-breaker handle in on or off position.
 - h. Handle Clamp: Loose attachment, for holding circuit-breaker handle in on position.
- C. Main Circuit Breaker
 - 1. Main circuit breakers shall have an overcenter, trip-free, toggle mechanism which will provide quick-make, quick-break contact action. Circuit breakers shall

have a permanent trip unit with thermal and magnetic trip elements in each pole. Each thermal element shall be true rms sensing and be factory calibrated to operate in a 40° C ambient environment. Thermal elements shall be ambient compensating above 40° C.

2. Two- and three-pole circuit breakers shall have common tripping of all poles. Circuit breaker frame sizes above 100 amperes shall have a single magnetic trip adjustment located on the front of the circuit breaker that allows the user to simultaneously select the desired trip level of all poles. Circuit breakers shall have a push-to-trip button for maintenance and testing purposes.
3. Breaker handle and faceplate shall indicate rated ampacity. Standard construction circuit breakers shall be UL Listed for reverse connection without restrictive line or load markings.
4. Circuit breaker escutcheon shall have international I/O markings, in addition to standard ON/OFF markings. Circuit breaker handle accessories shall provide provisions for locking handle in the ON or OFF position.
5. Lugs shall be CSA and UL Listed to accept solid or stranded copper conductors only. Lugs shall be suitable for 90° C rated wire, sized according to the 75° C temperature rating per NEC Table 310-16. Lug body shall be bolted in place; snap-in designs are not acceptable.

D. Branch Circuit Breakers

1. Circuit breakers shall be CSA and UL Listed with amperage ratings, interrupting ratings, and number of poles as indicated on the associated drawings.
2. Molded case branch circuit breakers shall have bolt-on type bus connectors.
3. Circuit breakers shall have an overcenter toggle mechanism which will provide quick-make, quick-break contact action. Circuit breakers shall have thermal and magnetic trip elements in each pole. Two- and three-pole circuit breakers shall have common tripping of all poles.
4. There shall be two forms of visible trip indication. The breaker handle shall reside in a position between ON and OFF. In addition, there shall be a red VISI-TRIP® indicator appearing in the clear window of the circuit breaker housing.

5. The exposed faceplates of all branch circuit breakers shall be flush with one another.
 6. Lugs shall be UL Listed to accept solid or stranded copper conductors only. Lugs shall be suitable for 90° C rated wire, sized according to the 75° C temperature rating per NEC Table 310-16.
 7. Breakers shall be CSA and UL Listed for use with the following factory installed accessories: Shunt Trip.
- E. Fused Switch: NEMA KS 1, Type HD; clips to accommodate specified fuses; lockable handle.
1. Fuses, and Spare-Fuse Cabinet: Comply with requirements specified in Division 26 Section "Fuses".

PART 3 - EXECUTION:

3.1 INSTALLATION:

- A. Receive, inspect, handle, store and install panelboards and accessories according to NEMA PB 1.1.
- B. Mount top of trim 90 inches above finished floor unless otherwise indicated.
- C. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
- D. Install overcurrent protective devices and controllers not already factory installed.
- E. Install filler plates in unused spaces.
- F. Stub four 1-inch empty conduits from panelboard into accessible ceiling space or space designated to be ceiling space in the future. Stub four 1-inch empty conduits into raised floor space or below slab not on grade.
- G. Arrange conductors in gutters into groups and bundle and wrap with wire ties.
- H. Comply with NECA 1.

3.2 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Division 26 Section "Identification for Electrical Systems."
- B. Create a directory to indicate installed circuit loads and incorporating Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.

- C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems".

3.3 CONNECTIONS

- A. Install equipment ground connections for panelboards with ground continuity to main electrical ground bus.
- B. Tighten electrical connectors and terminals according to manufacturer's published torque tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.4 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Acceptance Testing Preparation:
 - 1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
 - 2. Test continuity of each circuit.
- C. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- D. Panelboards will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION 26 24 16

SECTION 26 27 26 - WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Receptacles, receptacles with integral GFCI, and associated device plates.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.
- C. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing label warnings and instruction manuals that include labeling conditions.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:
 1. Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper).
 2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
 3. Leviton Mfg. Company Inc. (Leviton).
 4. Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).
 5. Approved equal.

2.2 STRAIGHT BLADE RECEPTACLES

- A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; 5351 (single), 5352 (duplex).
 - b. Hubbell; HBL5351 (single), CR5352 (duplex).
 - c. Leviton; 5891 (single), 5352 (duplex).
 - d. Pass & Seymour; 5381 (single), 5352 (duplex).
 - e. Approved equal.

2.3 GFCI RECEPTACLES

- A. General Description: Straight blade, feed-through type. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device is tripped.
- B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; GF20.
 - b. Pass & Seymour; 2084.
 - c. Approved equal.

2.4 TOGGLE SWITCHES

- A. Comply with NEMA WD 1, UL 20, and FS W-S-896.
- B. Switches, 120/277 V, 20 A:
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Single Pole:
 - 1) Hubbell; HBL1221.
 - 2) Pass & Seymour; CSB20AC1.
 - 3) Leviton; 1221
 - b. Three Way:
 - 1) Hubbell; HBL1223.
 - 2) Pass & Seymour; CSB20AC3.
 - 3) Leviton; 1223

2.5 WALL PLATES

- A. Single and combination types to match corresponding wiring devices.
 - 1. Plate-Securing Screws: Metal with head color to match plate finish.

2. Material for Finished Spaces: Steel with white baked enamel, suitable for field painting.
3. Material for Unfinished Spaces: Galvanized steel.
4. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."

- B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant, die-cast aluminum with lockable cover.

2.6 FINISHES

- A. Color: Wiring device catalog numbers in Section Text do not designate device color.
1. Wiring Devices Connected to Normal Power System: As selected by Architect, unless otherwise indicated or required by NFPA 70 or device listing.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.
- B. Coordination with Other Trades:
1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
 2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
 3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
 4. Install wiring devices after all wall preparation, including painting, is complete.
- C. Conductors:
1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
 2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
 3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.

4. Existing Conductors:
 - a. Cut back and pigtail, or replace all damaged conductors.
 - b. Straighten conductors that remain and remove corrosion and foreign matter.
 - c. Pigtailling existing conductors is permitted provided the outlet box is large enough.

D. Device Installation:

1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles down, and on horizontally mounted receptacles to the right.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

3.2 IDENTIFICATION

A. Comply with Division 26 Section "Identification for Electrical Systems."

1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine

printing with black-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.
 - 1. Test Instruments: Use instruments that comply with UL 1436.
 - 2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.
- B. Tests for Convenience Receptacles:
 - 1. Line Voltage: Acceptable range is 105 to 132 V.
 - 2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
 - 3. Ground Impedance: Values of up to 2 ohms are acceptable.
 - 4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
 - 5. Using the test plug, verify that the device and its outlet box are securely mounted.
 - 6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new, and retest as specified above.
- C. Wiring device will be considered defective if it does not pass tests and inspections.

END OF SECTION 26 27 26

SECTION 26 28 16 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes individually mounted enclosed switches and circuit breakers used for the following:
 - 1. Feeder and branch-circuit protection.
 - 2. Motor and equipment disconnecting means.
- B. Section Includes:
 - 1. Fusible switches.
 - 2. Nonfusible switches.
 - 3. Molded-case circuit breakers (MCCBs).
 - 4. Enclosures.

1.2 DEFINITIONS

- A. GFCI: Ground-fault circuit interrupter.
- B. NC: Normally closed.
- C. NO: Normally open.
- D. RMS: Root mean square.
- E. SPDT: Single pole, double throw.

1.3 SUBMITTALS

- A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated.
- B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Wiring Diagrams: For power, signal, and control wiring.
- C. Field quality-control reports.
- D. Operation and maintenance data.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.
- C. Comply with NEMA AB 1 and NEMA KS 1.

1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Rate equipment for continuous operation under the following conditions, unless otherwise indicated:
 - 1. Ambient Temperature: Not less than minus 22 deg F and not exceeding 104 deg F.
 - 2. Altitude: Not exceeding 6600 feet

PART 2 - PRODUCTS

2.1 FUSIBLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; a brand of Schneider Electric.
 - 5. Approved equal.
- B. Type HD, Heavy Duty, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS1, horsepower rated, with clips or bolt pads to accommodate specified fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- C. Accessories:
 - 1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.

2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
4. Lugs: Suitable for number, size, and conductor material.
5. Service-Rated Switches: Labeled for use as service equipment.

2.2 NONFUSIBLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 3. Siemens Energy & Automation, Inc.
 4. Square D; a brand of Schneider Electric.
 5. Approved Equal.
- B. Type HD, Heavy Duty, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- C. Accessories:
 1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
 2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
 3. Lugs: Suitable for number, size, and conductor material.

2.3 MOLDED-CASE CIRCUIT BREAKERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 3. Siemens Energy & Automation, Inc.
 4. Square D; a brand of Schneider Electric.
 5. Approved equal.
- B. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.
- C. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
- D. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front mounted, field-adjustable trip setting.
- E. Electronic Trip Unit Circuit Breakers: To be installed in the main panels, RMS sensing; field-replaceable rating plug; with the following field-adjustable settings:
1. Instantaneous trip.
 2. Long- and short-time pickup levels.
 3. Long- and short-time time adjustments.
 4. Ground-fault pickup level, time delay, and I² t response.
- F. GFCI Circuit Breakers: Single- and two-pole configurations with 5 -mA trip sensitivity. 5. Molded-Case Switch: Molded-case circuit breaker without trip units.
- G. Molded-Case Circuit-Breaker Features and Accessories: Standard frame sizes, tri
- H. Features and Accessories:
1. Standard frame sizes, trip ratings, and number of poles.
 2. Lugs: Suitable for number, size, trip ratings, and conductor material.
 3. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.

4. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
5. Shunt Trip: 120-V trip coil energized from separate circuit, set to trip at 55 percent of rated voltage.
6. Undervoltage Trip: Set to operate at 35 to 75 percent of rated voltage with field adjustable 0.1- to 0.6-second time delay

2.4 ENCLOSURES

- A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.
 1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.
 2. Outdoor Locations: NEMA 250, Type 3R.
 3. Other Wet or Damp, Indoor Locations: NEMA 250, Type 4.
 4. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 12.

2.5 FACTORY FINISHES

- A. Manufacturer's standard prime-coat finish ready for field painting.
- B. Finish: Manufacturer's standard paint applied to factory-assembled and -tested enclosures before shipping.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.
- B. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- C. Install fuses in fusible devices.
- D. Comply with NECA 1.

3.2 IDENTIFICATION

- A. Comply with requirements in Division 26 Section "Identification for Electrical Systems."
 - 1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
 - 2. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.3 CONNECTIONS

- A. Install equipment grounding connections for switches and circuit breakers with ground continuity to main electrical ground bus.
- B. Install power wiring. Install wiring between switches and circuit breakers, and control and indication devices.
- C. Tighten electrical connectors and terminals according to manufacturer's published torque tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.4 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Acceptance Testing Preparation:
 - 1. Test insulation resistance for each enclosed switch and circuit breaker, component, connecting supply, feeder, and control circuit.
 - 2. Test continuity of each circuit.
- C. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- D. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports, including a certified report that identifies enclosed switches and circuit breakers and that describes scanning results. Include notation of

deficiencies detected, remedial action taken and observations
after remedial action.

END OF SECTION 26 28 16

SECTION 26 51 00 - LED INTERIOR BUILDING LIGHTING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Provide luminaires, supports and accessories including plaster frames, trim rings and back boxes for plaster, drywall, or concrete ceilings as necessary.
- B. The types of luminaires to be installed are indicated and detailed on the luminaire schedule on the Drawings, which also provides details on manufacturers, catalog numbers, lamping, etc.
- C. Coordinate in field to avoid conflicts between installation of luminaires and supports with the installation of existing mechanical equipment, conduits, piping, ceiling structures, etc.
- D. All luminaires shall operate on nominal 120 volts, 60 Hz single phase service as indicated on the Drawings and in the Specifications.

1.2 REFERENCE STANDARDS

- A. National Energy Policy Act of 2005, Public Law No. 109-58.
- B. IESNA LM-63 - ANSI Approved Standard File Format for Electronic Transfer of Photometric Data and Related Information; 2002.
- C. NFPA 70 - National Electrical Code; National Fire Protection Association; 2017.
- D. IESNA LM-79-08 IESNA - Approved Method for Electrical and Photometric Measurements of Solid-State Lighting Products; 2008.
- E. IESNA LM-80-08 IESNA - Approved Method for Measuring Lumen Maintenance of LED Light Sources.
- F. IESNA TM-21-2011 - Projecting Long Term Lumen Maintenance of LED Light Sources.
- G. UL 1310 and 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products.
- H. OSHA 29CFR1910.7 - luminaires shall be listed by nationally recognized testing laboratory approved by United States Department of Labor, Occupational Safety and Health Administration (OSHA).

- I. ANSI C82.11 - Performance requirement for high frequency ballasts.
- J. ANSI/IES RP-16-10 - Nomenclature and definitions for illuminating engineering.
- K. ANSI C62.41 - Recommended practice in low power circuits.
- L. IEC 61347-1 - General and safety requirements for lamp control gear.
- M. IEC 61347-2-13 - Particular requirements for electronic control gear for LED modules.
- N. IEC 62384 - DC or AC supplied electronic control gear for LED modules - performance requirements.
- O. IEC 61000-3-2 - Harmonic current emissions.
- P. IEC 61547 - EMC immunity requirements.
- Q. IEC 62386-101/102/207 - Digital addressable lighting interface (DALI).
- R. Federal Communications Commission (FCC) rules - Part 15 Class B: Radio Frequency Devices.
- S. Entertainment Services and Technology Association
 - 1. ESTA E1.3 - Entertainment Technology - Lighting Control System - 0 to 10V Analog Control Protocol.

1.3 DEFINITIONS

- | | |
|--------------|--|
| CALiPER | DOE Commercially Available LED Product Evaluation and Reporting program for the testing and monitoring of commercially available LED Luminaires and lights.
http://www1.eere.energy.gov/buildings/ssl/m/caliper.html |
| CCT | Correlated Color Temperature: The temperature in units of kelvin of a blackbody whose chromaticity most nearly resembles that of the light source in question. |
| cd | Candela: SI Unit of luminous intensity, equal to 1 lumen per steradian (lm/sr). |
| Chromaticity | The property of color of light defined by the dominant or complementary wavelength and purity aspects of the color taken together. |
| CRI | Color Rendering Index - measure of the degree of color shift of reference objects when illuminated by the light |

	source as compared to a reference source of comparable color temperature.
fc	Footcandle: Unit of illuminance, equal to 1 lm/ft ² .
L80	The extrapolated life in hours of the luminaire when the luminous output depreciates 20 percent from initial values.
LED	Light Emitting Diode
METS	Material Engineering and Testing Services of the Translab
MacAdam	Shape on the CIE chromaticity diagram that illustrates how much one can "stray" from the target before perceiving a difference from the target color.
NEMA	National Electrical Manufacturers Association
NRTL	Nationally Recognized Testing Laboratory
NVLAP	National Voluntary Laboratory Accreditation Program - A program under the US DOE to accredit independent testing laboratories to qualify.
PF	Power Factor - The ratio of the real power component to the total (complex) power component.
	Rated Power Power consumption that the luminaire was designed and tested for at ambient temperature (70°F or 21°C).
RoHS	Compliance aims to restrict certain dangerous substances commonly used in electronic equipment, including Lead, Cadmium, Mercury and others.
SPD	Surge Protection Device - A subsystem or component(s) that can protect the unit against short duration voltage and current surges.
SSL	Solid State Lighting
THD	Total Harmonic Distortion - The amount of higher frequency power on the power line.

1.4 SUPPLEMENTAL SUBMITTALS

A. Product Data

1. Provide standard print catalog sheets, Specifications, installation instructions, and photometric data from a recognized independent laboratory for each type of

luminaire. Submittals that do not include distribution curves and photometric data will be rejected. All options and specified requirements shall be identified on submittal.

B. Mounting Details

Submit mounting details for each type of luminaire including attachments to structure, anchors, rods, hickey, etc.

C. Samples

1. Submit luminaire samples as requested by the owner.
2. Submit mounting hardware as requested by the owner.

D. Submission of Substitute Luminaires (luminaires other than specified herein or on the Luminaire Schedule).

1. Submittals for substitute luminaires shall be the standard print catalog sheets from the manufacturers (CADD drawings and computer printouts are not acceptable).
2. Substitute luminaires shall meet or exceed photometric quality of luminaires designated on the schedule. Photometric data of substitute luminaires shall be substantiated by an independent testing lab, such as I.T.L. Photometric data by Lumen Micro or similar software programs are not acceptable.
3. Substitute luminaires shall meet or exceed the quality of the luminaires designated on luminaires schedule in construction, finishing, materials, reflector, diffuser etc.
4. Substitute luminaires shall closely match the appearance, dimensions and features of the luminaires designated.
5. Submit one sample of each type of substitute luminaires as requested, with one set of mounting hardware for approval.
6. No more than three (3) submittals shall be permitted for substitution of each specific luminaire type. Should the third submittal be rejected, the Contractor shall be required to provide the luminaires specified on the luminaire schedule.
7. If the specified luminaire is substituted, the contractor will submit foot-candle calculations with the

shop drawing to prove that it meets the lighting levels specified.

G. Warranty - sample of special warranty

1.5 QUALITY ASSURANCE

A. Qualifications

1. Manufacturer: Provide products of firms listed in Part 2 that are regularly engaged in the manufacture of lighting fixtures and components of types and ratings required and whose products have been in satisfactory use in similar service for not less than 5 years. The manufacturer of the lighting fixtures and components shall comply with the provisions of the appropriate code and standards. All fixtures shall be pretested before shipping.

B. Design Qualification Testing

1. Design Qualification Testing shall be performed by a National Voluntary Laboratory Accreditation Program (NVLAP) testing facility. Such testing may be performed by the manufacturer or an independent testing lab hired by the manufacturer on new luminaire designs and when a major design change has been implemented on an existing design. A major design change is defined as a design change (electrical or physical), which changes any of the performance characteristics of the luminaire, results in a different circuit configuration for the power supply, or changes the layout of the individual LEDs in the module.
2. A quantity of two units for each design shall be submitted for Design Qualification Testing.
3. Product submittals shall be accompanied by product specification sheets or other documentation that includes the designed parameters as detailed in this specification. These parameters include (but are not limited to):
 - a. Maximum power in Watts.
 - b. L80 in hours, when extrapolated for the worse case operating temperature. TM21 report shall be submitted to demonstrate this.

Product submittals shall be accompanied by performance data that is derived in accordance with appropriate IESNA testing standards and tested in a laboratory that

is NVLAP accredited for Energy Efficient Lighting Products.

1.6 LUMINAIRE PROTECTION

- A. The Contractor is required to protect luminaires from damage during installation and up to time of acceptance by the owner. Broken luminaires, glassware, plastics, LED Modules, etc. shall be replaced by the Contractor with new parts, without any additional expense to the owner until final acceptance.

1.8 WARRANTY

- A. The manufacturer shall provide a single source, 5 year limited warranty against loss of performance and defects in materials and workmanship for all components of the luminaire. Warranty is from the time of acceptance of the Luminaires. All warranty documentation shall be provided to customer prior to the first shipment.
- B. Provide manufacturer's warranty covering 5 years on drivers from date of installation. Refer to manufacturer's terms and conditions on the website for detailed information.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide luminaires as designated on the luminaire schedule. Luminaires of the luminaire schedule are designated by types, manufacturers and catalog numbers. Substitute luminaires by approved manufacturers listed in these specifications will be approved, provided that all requirements are satisfied.
- B. The requirements specified herein are minimum requirements and shall be supplemented by any other requirements indicated on the luminaire schedule. All luminaires, including those designated on the luminaire schedule on the drawings by Catalog Numbers, or Catalog Numbers mentioned in the Specifications, shall nevertheless be specially modified to meet the requirements of these specifications.
- C. All luminaires and components shall be UL listed or listed by another nationally recognized Testing Agency .

2.2 MANUFACTURERS

- A. LED luminaires For Building Interior: Selection shall be limited to luminaires from the Manufactures as specified or approved equal from the following manufacturers.
 - 1. Acuity Brands
 - 2. Cooper Lighting

3. Hubble Lighting
 4. Finelite
 5. Philips
 6. HE Williams
 7. National Lighting
 8. Focal Point
 9. Lightolier
 10. Peerless
- B. Conformance: Fixtures shall be manufactured in strict accordance with the Contract Drawings and Specifications.
- C. Codes: Materials and installation shall be in accordance with the latest revision of the National Electrical Code and any applicable Federal, State, and local codes and regulations.
- D. UL or ETL US Listing: All fixtures shall be manufactured in strict accordance with the appropriate and current requirements of the "Standards for Safety" to UL 8750 or others as they may be applicable. A listing shall be provided for each fixture type, and the appropriate label or labels shall be affixed to each fixture in a position concealing it from normal view.
- E. Luminaire shall be DLC Certified (Design Lights Consortium)
- F. Base Bid Manufacturers: Are listed on fixture schedule and specification. Manufacturers listed without accompanying catalog numbers are responsible for meeting the quality standards and photometric distribution set by the specified product.
- G. Alternate Manufacturers: Identification by means of manufacturer's names and catalog numbers is to establish basic features, quality and performance standards. Any substitutions by other manufacturers listed must meet or exceed these standards and shall be approved by the owner. Mock-ups in a sample workshop will be required in addition to submissions indicated to prove the quality of light prior to approval to manufacture for the project.
- H. Luminaire shall carry the Lighting Facts label, verified based on LM-79 test reports. Refer to the following web site: www.lightingfacts.com.

2.5 LUMINAIRES TYPE - RECESSED IN CEILING

- A. Each luminaire shall consist of an assembly that utilizes LEDs as the light source. In addition, a complete luminaire shall consist of a housing, LED array, and electronic driver (power supply) and integral controls as per this specification.

- B. Each luminaire shall be designed to operate at an average operating temperature of 25°C.
- C. The operating temperature range shall be 0°C to +25°C.
- D. Each luminaire shall meet all parameters of this specification throughout the minimum operational life of 50,000 hours when operated at the average operating temperature .
- E. Luminaire Construction
 - 1. Luminaire housing to have no visible welding, screws, springs, hooks, rivets, bare LEDs, or plastic supports.
 - 2. The luminaire shall be a single, self-contained device, not requiring on-site assembly for installation. The power supply and circuit board for the luminaire shall be integral to the unit.
 - 3. Luminaires shall be fabricated from post painted cold rolled 22 GA steel and shall be a rigid structure with die cast end caps, mechanically attached with no visible fasteners. Luminaire may be mounted and wired in continuous rows.
 - 4. Finish: Polyester powder coat painted in white.
 - 5. Luminaire lengths in single sections of 4' or 8' shall have exact suspension spacing of 4' or 8'. Overall length - add 5/8" for flat end cap and 4" for sculpted end cap.
 - 6. Luminaire lengths of 4' or 8' shall be joined to create a continuous run using internal joiners
 - 7. Optics - Engineered optical systems of high performance lens, diffusers and metal reflectors.
 - 8. Lens shall be single clear diffuser with advanced optical film and shall provide LED concealment and even illumination across the diffuser.
 - 9. Polymeric materials (if used) of enclosures containing either the power supply or electronic components of the luminaire shall be made of UL94VO flame retardant materials. Luminaire lenses are excluded from this requirement.
 - 10. Suspension shall be aircraft wire with total suspension length as specified. Cable to be field adjustable.
 - 12. The assembly and manufacturing process for the SSL luminaire shall be designed to assure all internal

components are adequately supported to withstand mechanical shock and vibration and prevent light leaks at all visible joints.

F. LED Sources

1. LEDs shall be manufactured by Nichia or Cree.
 - a. Lumen Output - minimum initial delivered lumen output of the luminaire shall be as follows for the lumens exiting the luminaire in the 0-360 degree zone - as measured by IESNA Standard LM-79-08 in an accredited lab. Exact tested lumen output shall be clearly noted on the shop drawings.
 - 1) 4' fixtures - 8 $\frac{1}{4}$ " x 4' - 3400 (30 watts max.) or 4800 (45 watts max.) nominal delivered lumens @ 3500K per specification.
 - 2) 8' fixtures - 8 $\frac{1}{4}$ " x 8' - 6800 (60 watts max.) or 9600 (90 watts max.) nominal delivered lumens @ 3500K.
 - 3) Lumen output shall not decrease by more than 20% over the minimum operational life of 50,000 hours at the rated ambient operating temperature.
 - b. Individual LEDs shall be connected such that a catastrophic loss or the failure of one LED will not result in the loss of the all LEDs within the luminaire.
 - c. LED Boards shall be suitable for field maintenance and have plug-in connectors. LED boards shall be upgradable.
 - d. Light Color/Quality
 - 1) Correlated Color Temperature (CCT) range as per specification, between 3000K, 3500K and 4000K shall be correlated to chromaticity as defined by the absolute (X, Y) coordinates on the 2-D CIE chromaticity chart. (*Edit color temperature per project specification*)
 - 2) Color shift over 6,000 hours shall be <0.007 change in u' v' as demonstrated in IES LM80 report.
 - 3) The Color Rendition Index (CRI) shall be 80 or greater.

- 4) LED boards to be tested for color consistency and shall be within a space of 2.5 MacAdam ellipses on the CIE chromaticity chart.

2. Power Supply and Drive

- a. Driver: Acceptable manufacturer: eldoLED or approved equal (Drivers to be compatible with the fixtures)
- b. Ten-year expected life while operating at maximum case temperature and 90 percent non-condensing relative humidity.
- c. Driver shall be UL Recognized under the component program and shall be modular for simple field replacement. Drivers that do not meet these requirements will not be accepted.
- d. Electrical characteristics: 120 - 277 volt, UL Listed, CSA Certified, Sound Rated A+. Driver shall be > 80% efficient at full load across all input voltages. Input wires shall be 18AWG solid copper minimum.
- e. Dimming: Driver shall be suitable for full-range dimming. LED dimming shall be equal in range and quality to a commercial grade incandescent dimmer. Quality of dimming to be defined by dimming range, freedom from perceived flicker or visible stroboscopic flicker, smooth and continuous change in level (no visible steps in transitions), natural square law response to control input, inaudible in 26db environment, and stable when input voltage conditions fluctuate over what is typically experienced in a commercial environment. Demonstration of this compliance to dimming performance will be necessary for substitutions or prior approval. The luminaire shall be capable of continuous dimming without perceivable flicker over a range of 100 percent to 0.1 percent of rated lumen output with a smooth shut off function.
 - 1) Dimming shall be controlled by a 0-10V signal.
 - 2) Driver shall include ability to provide no light output when the analog control signal drops below 0.5V, or the DALI/DMX digital signal calls for light to be extinguished and shall consume 0.5 watts or less in this standby. Control dead band between .5 and

.65V shall be included to allow for voltage variation of incoming signal without causing noticeable variation in fixture to fixture output.

- 3) Driver shall be capable of configuring a linear or logarithmic dimming curve, allowing fine grained resolution at low light levels.
 - 4) Driver must be capable of 20 bit dimming resolution for white light LED driver.
 - 5) Drivers shall track evenly across multiple fixtures at all light levels, and shall have an input signal to output light level that allows smooth adjustment over the entire dimming range.
- f. Flicker: Driver and luminaire electronics shall deliver illumination that is free from objectionable flicker as measured by flicker index (ANSI/IES RP-16-10). At all points within the dimming range from 100-0.1 percent luminaire shall have:
- 1) Less than 1 percent flicker index at frequencies below 120 Hz.
 - 2) Less than 12 percent flicker index at 120 Hz, and shall not increase at greater than 0.1 percent per Hz to a maximum of 80 percent flicker index at 800Hz.
- g. Driver disconnect shall be provided where required to comply with codes.
- h. The electronics/power supply enclosure shall be internal to the SSL luminaire and be accessible per UL requirements.
- i. The surge protection which resides within the driver shall protect the luminaire from damage and failure for transient voltages and currents as defined in ANSI/IEEE C64.41 2002 for Location Category A, where failure does not mean a momentary loss of light during the transient event.

3. Electrical

- a. Power Consumption: Maximum power consumption, +5% when operating between 120 - 277V (or 346V) shall be as follows:

- 1) 4' Fixtures - 8¼" x 4' - 30 watts and 45 watts nominal
 - 2) 8' fixtures - 8¼" x 8' - 60 watts and 90 watts nominal
- b. Operation Voltage - The luminaire shall operate from a 60 HZ ±3 HZ AC line over a voltage ranging from 120 VAC to 277 VAC. The fluctuations of line voltage of (+10%) shall have no visible effect on the luminous output.
- 1) Adjustment of forward LED voltage, supporting 3V through 60V.
 - 2) Adjustment of LED current from 200mA to 1.05A at the 100 percent control input point in increments of 1mA.
 - 3) Adjustment for operating hours to maintain constant lumens (within 5 percent) over the 50,000 hour design life of the system, and deliver up to 20 percent energy savings early in the life cycle.
- c. Electrical connections between normal power and driver must be modular utilizing a snap fit connector. All electrical components must be easily accessible after installation and be replaceable without lowering the luminaire.
- d. All electrical components shall be RoHS compliant.
4. Photometric Requirements
- a. Luminaire performance shall be tested as described herein.
 - b. Luminaire performance shall be judged against the specified minimum luminance in the specified pattern for a particular application.
 - c. Luminaire lighting performance shall be adjusted (depreciated) for the minimum life expectancy
 - 1) The performance shall be adjusted (depreciated) by using the LED manufacturer's data or the data from the IESNA Standard TM-21 test report, which ever one results in a higher level of lumen depreciation.

- 2) The ratio of the peak-to-zenith maximum candela ratios shall be - 1.94:1 @ 127.5 degrees.
 - d. The luminaire may be determined to be compliant photometrically, if:
 - 1) The initial minimum luminance level is achieved in 100% of the area of the specified lighting pattern.
 - 2) The measurements shall be calibrated to standard photopic calibrations.
5. Thermal Management
 - a. The thermal management (of the heat generated by the LEDs) shall be of sufficient capacity to assure proper operation of the luminaire over the expected useful life.
 - b. The LED manufacturer's maximum junction temperature for the expected life shall not be exceeded at the average operating ambient
 - c. The LED manufacturer's maximum junction temperature for the catastrophic failure shall not be exceeded at the maximum operating ambient temperature
 - d. The luminaire shall have a UL or CSA rating.
 - e. The Driver manufacturer's maximum case temperature shall not be exceeded at the maximum operating ambient temperature. Thermal management shall be passive by design. The use of fans or other mechanical cooling devices shall not be allowed.
6. Optics
 - a. Optics shall consist of high performance advanced optical film, diffuser, and metal reflector.
 - b. Optics shall eliminate source image.
8. Luminaire Identification
 - a. Each luminaire shall have the manufacturer's name, trademark, model number, serial number, date of manufacture (month-year), and lot number as identification permanently marked inside each unit and the outside of each packaging box.

- b. The following operating characteristics shall be permanently marked inside each unit: rated voltage and rated power in Watts and Volt-Ampere.

9. Luminaire manufacturing requirements

- a. The luminaires shall be manufactured in accordance with a manufacturer quality assurance (QA) program. The QA program shall include two types of quality assurance: (1) design quality assurance and (2) production quality assurance. The production quality assurance shall include statistically controlled routine tests to ensure minimum performance levels of the modules built to meet this specification. These tests shall include: CCT, CRI, Lumen output, and wattage. Tests shall be recorded, analyzed and maintained for future reference.
- b. QA process and test results documentation shall be kept on file for a minimum period of seven years.

2.8 LUMINAIRE COMPONENTS/ACCESORIES

A. Equip luminaires with:

1. Finishing collar and/or combination finishing collar/outlet box.
2. Provide end caps positively attached for individually mounted luminaires and ends of continuous rows.

B. Stems and Hickeys

1. Stems for pendant luminaires shall be standard pipes not less than 3/8" diameter. Stems shall be no less than 6" long with a cut thread. Pipe stems at luminaire end shall have a length of threads of approximately 1¹/₂" for luminaire alignment.
2. Each stem shall be provided with a brass/steel swivel or other self-aligning device of type approved by the owner, a hickey, a malleable iron bushing, a canopy, minimum of three locknuts/washers (one locknut/washer above and two below for locking purpose) and other accessories for the safe support of pendant luminaires.

C. Luminaire Finishes

1. The finish of all luminaires not described on the luminaire schedule or in the Specifications shall be as selected by the owner's Representative. The Contractor

shall submit a color chart to the owner's Representative for selection of finish.

2. Exterior Luminaires shall have an anodized or baked powder coat finish.

PART 3 - EXECUTION

3.1 LUMINAIRE INSTALLATION

A. General

1. The Contractor shall be responsible for the proper and safe mounting and support of all luminaires. Installation shall meet all the requirements of the National Electrical Code. Provide all items of equipment (stems, hangers, rods, inserts, boxes, brackets, yokes, channels, frames, etc.) required to adequately and safely support each luminaire in a manner acceptable to the owner.
2. Provide a luminaire at each location shown on Drawings of the type indicated by symbol or other notation. If the type is not specifically noted on Drawings, the Contractor shall provide without extra cost luminaires of the same type called for under similar condition elsewhere on the Drawings as determined by the owner.
3. The Contractor shall examine the drawings and coordinate closely with the all General Construction trades on all work involved with each type of luminaire to be installed. Contractor shall verify all sizes, locations and conditions under which luminaire are to be installed. Provide plaster frames and running bars (black iron) etc. as required.
4. The Contractor is required to protect luminaires from damage during installation, up to time of acceptance by the owner. Any broken or marred luminaire, glassware, plastics, lamps, etc. shall be replaced by the Contractor at no additional cost to the owner.
5. A suitable outlet box shall be provided by the Contractor for each luminaire provided. The box shall be cast into concrete or supported using two double split type anchors when installed in concrete walls or ceiling.
6. Number of supports for luminaires shall be as specified in "Luminaire Support Schedule" in Article 3.07.
7. A surface or pendant type luminaire, regardless of its weight, shall not be mounted directly on the concealed or

exposed ceiling spline of a lightweight, mechanical acoustical ceiling system. Such luminaires shall be supported from the building structure.

8. For all pendant mounted luminaires, regardless of weight and ceiling types, provide outlet boxes capable of supporting up to 150 pounds, Westinghouse model 01050/01052 or equal.

3.3 LUMINAIRE WORK IN EXISTING CONSTRUCTION

A. Canopies on Surface Mounted Outlet Boxes

Where luminaires are mounted upon surface-mounted outlet boxes with surface mounted conduit, the Contractor shall provide a luminaire canopy sufficiently deep to permit exposed conduits to pass through. Canopy shall have proper openings cut by luminaires' manufacturer through which conduits may pass. Submit sample of canopy for approval before installation.

B. Adapters

Where new luminaires are mounted on existing outlet boxes and mounting holes are not in proper position, suitable adapter or extension collars shall be provided.

C. Removed Luminaires

1. Where the Drawings or Specifications call for the Contractor to remove existing luminaires, the Contractor shall also install a suitable blank face plate on the exposed outlet box.
2. If the outlet box is to be used in the extension of branch circuit wiring, this Contractor shall furnish and install a suitable extension collar that may be required to receive surface raceway or conduit.

3.4 MOUNTING HEIGHT OF LUMINAIRES

- A. Luminaires shall be hung in accordance with the mounting heights indicated on Drawings. Mounting heights A.F.F. (distance above finished floor) are detailed on the Luminaire Schedule, or elsewhere on the drawings.
- B. The Contractor shall provide stems of sufficient length to assure luminaire mounting at the specified mounting height.

3.5 LUMINAIRE SUPPORT SCHEDULE

- A. Unless otherwise indicated on drawings, provide the following number of supports for luminaires.

1. An adequately supported outlet box with luminaire stud may be utilized as one point of support for surface or recessed luminaires weighing less than 40 lbs. For all pendant mounted luminaires, regardless of weight and ceiling type, provide outlet boxes capable of supporting up to 150 lbs.; Westinghouse model 01050/01052 or equal.
- B. Ceiling Mounted Luminaires (Surface Mounted, Pendant Mounted or Recessed Mounted)
 1. Ceiling Mounted Luminaires:
 - a. Support individual luminaires less than 2 feet wide at 2 points.
 - b. Support continuous row of luminaires less than 2 feet wide at points equal to the number of luminaire sections plus one, except that supports shall not exceed 12 foot on centers and shall be evenly distributed over the entire length of the luminaire's row.
 - c. Support individual luminaires 2 feet or wider at 4 corners.
 - d. Support continuous row of luminaires 2 feet or wider at points equal to twice the number of luminaire sections plus 2. Uniformly distribute the points of support over the row of luminaires.

3.6 FIELD QUALITY CONTROL

- A. Perform field inspection, testing, and adjusting.
- B. Operate each luminaire after installation and connection. Inspect for improper connections and operation.
- C. Test and calibrate all controls associated with luminaires, i.e. daylighting, occupancy sensors, etc.).

3.7 LED CLEANING

- A. Clean electrical parts to remove conductive and deleterious materials.
- B. Remove dirt and debris from lens and enclosures
 1. For cleaning acrylic lenses or diffusers, use a feather duster or dry cotton cheesecloth to rid the lens/diffuser of any minor dust. For fingerprints, smudges, or other dirt present, use an ammonia-based

cleaner (such as Windex) and wipe carefully with cotton cheesecloth (so as to avoid injury from any prismatic texture of the lens).

2. Contractor shall replace the lens if Job site contamination cannot be removed using the above recommendations.
3. Clean photometric control surfaces as recommended by manufacturer.

END OF SECTION 26 51 00

SECTION 28 05 00 - COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sleeves for raceways and cables.
2. Sleeve seals.
3. Grout.
4. Common electronic safety and security installation requirements.

1.2 SUBMITTALS

A. Product Data: For sleeve seals.

PART 2 - PRODUCTS

2.1 SLEEVES FOR RACEWAYS AND CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Sleeves for Rectangular Openings: Galvanized sheet steel.

1. Minimum Metal Thickness:

- a. For sleeve cross-section rectangle perimeter less than 50 inches and no side more than 16 inches, thickness shall be 0.052 inch.
- b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches and 1 or more sides equal to, or more than, 16 inches, thickness shall be 0.138 inch.

2.2 SLEEVE SEALS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. Advance Products & Systems, Inc.
 - b. Calpico, Inc.
 - c. Metraflex Co.
 - d. Pipeline Seal and Insulator, Inc.
 - e. Approved Equal
- 2. Sealing Elements: NBR interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
 - 3. Pressure Plates: Stainless steel. Include two for each sealing element.
 - 4. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.3 GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRONIC SAFETY AND SECURITY INSTALLATION

- A. Comply with NECA 1.
- B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.
- C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.
- D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electronic safety and security equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
- E. Right of Way: Give to piping systems installed at a required slope.

3.2 SLEEVE INSTALLATION FOR ELECTRONIC SAFETY AND SECURITY PENETRATIONS

- A. Electronic safety and security penetrations occur when raceways, pathways, cables, wireways, or cable trays penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- E. Cut sleeves to length for mounting flush with both surfaces of walls.
- F. Extend sleeves installed in floors 2 inches above finished floor level.
- G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.
- H. Seal space outside of sleeves with grout for penetrations of concrete and masonry
 - 1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.
- I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants."
- J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with requirements in Division 07 Section "Penetration Firestopping."

- K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
- L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel /cast-iron /pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.3 SLEEVE-SEAL INSTALLATION

- A. Install to seal exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.4 FIRESTOPPING

- A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electronic safety and security installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

END OF SECTION 28 05 00

SECTION 28 31 11 - MODIFICATION AND ADDITION TO EXISTING ADDRESSABLE
FIRE-ALARM SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. System smoke detectors.
 - 2. Heat detectors
 - 3. Notification appliances

1.3 DEFINITIONS

- A. LED: Light-emitting diode.
- B. NICET: National Institute for Certification in Engineering Technologies.

1.4 SYSTEM DESCRIPTION

- A. Existing fire alarm system is addressable system, with multiplexed signal addressable Manual, Automatic Smoke/Heat Detection and Sprinkler Alarm System with Central Office Connection. The system is addressable, with all initiating devices individually annunciated on the Fire Alarm Control Panel, the remote annunciator and the printer. The system has supervised wiring with all operations as herein described.

1.5 SUBMITTALS

- A. General Submittal Requirements:
 - 1. Shop Drawings shall be prepared by persons with the following qualifications:
 - a. Trained and certified by manufacturer in fire-alarm system design.
 - b. NICET-certified fire-alarm technician, Level III minimum.

c. Licensed or certified by authorities having jurisdiction.

B. Product Data: For each type of product indicated.

C. Qualification Data: For qualified Installer.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.

B. Installer Qualifications: Installation shall be by personnel certified by NICET as fire-alarm Level II technician.

C. Source Limitations for Fire-Alarm System and Components: Obtain fire-alarm system from single source from single manufacturer. Components shall be compatible with, and operate as, an extension of existing system.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

E. NFPA Certification: Obtain certification according to NFPA 72 by an NRTL.

1.7 PROJECT CONDITIONS

A. Interruption of Existing Fire-Alarm Service: Do not interrupt fire-alarm service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary guard service according to requirements indicated:

1. Notify Owner no fewer than five days in advance of proposed interruption of fire-alarm service.

1.8 SEQUENCING AND SCHEDULING

A. Existing Fire-Alarm Equipment: Maintain existing equipment fully operational until new equipment has been tested and accepted. As new equipment is installed, label it "NOT IN SERVICE" until it is accepted. Remove labels from new equipment when put into service and label existing fire-alarm equipment "NOT IN SERVICE" until removed from the building.

- B. Equipment Removal: After acceptance of fire-alarm system, remove existing disconnected fire-alarm equipment and wiring.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products by manufacturer of existing fire alarm system Edwards System Technology (single source) EST3.

1. BEFORE STARTING ANY FIRE ALARM WORK THE CONTRACTOR SHALL CONTACT FIRE ALARM VENDOR "FIRE, SECURITY AND SOUND SYSTEM INC." AT (518) 250-4364 FOR INSTALLATION AND PROGRAMMING OF THE FIRE ALARM SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR THE DISCONNECTION, RECONNECTION AND RE-CERTIFICATION OF THE FIRE ALARM SYSTEM.
2. The contractor shall obtain all fire alarm devices required for the project from the FA Vendor, Contractor is responsible for the installation.

2.2 SYSTEMS OPERATIONAL DESCRIPTION

- A. Fire-alarm signal initiation shall be by one or more of the following devices:
 1. Smoke detectors.
 2. Heat detectors
- B. Fire-alarm system shall operate as per existing sequence of operation of existing fire alarm system.

2.3 FIRE-ALARM CONTROL UNIT

- A. General Requirements for Fire-Alarm Control Unit:
 1. Fire alarm control panel is existing fire alarm panel (model number EST-3 manufactured by Edwards System Technology).
- B. Elevator Recall:
 1. Smoke/Heat detectors at the following locations shall initiate automatic elevator recall.
 - a. Elevator lobby detectors except the lobby detector on the designated floor.
 - b. Smoke/Heat detector in elevator machine room.

- c. Smoke/Heat detectors in elevator hoistway.
 - d. Smoke/Heat detectors in elevator pit.
- 2. Elevator lobby detectors located on the designated recall floors shall be programmed to move the cars to the alternate recall floor.
 - 3. Heat detectors connected to sprinkler in an elevator shaft and elevator machine room shall shut down elevators associated with the location without time delay.
 - a. Heat detector associated with the sprinkler in the elevator pit may have a delay to allow elevators to move to the designated floor.
 - b. Heat detectors with shunt trip should have delay to allow elevator to recall to the designated floor and open doors.

2.4 SYSTEM SMOKE DETECTORS

A. General Requirements for System Smoke Detectors:

- 1. Comply with UL 268; operating at 24-V dc, nominal.
- 2. Detectors shall match existing.
- 3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
- 4. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
- 5. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
- 6. Integral Visual-Indicating Light: LED type indicating detector has operated.
- 7. Remote Control: Unless otherwise indicated, detectors shall be analog-addressable type, individually monitored at fire-alarm control unit for calibration, sensitivity, and alarm condition and individually adjustable for sensitivity by fire-alarm control unit.
 - a. Rate-of-rise temperature characteristic shall be selectable at fire-alarm control unit for 15 or 20 deg F per minute.
 - b. Fixed-temperature sensing shall be independent of rate-of-rise sensing and shall be settable at fire-alarm control unit to operate at 135 or 155 deg F.
 - c. Provide multiple levels of detection sensitivity for each sensor.

B. Photoelectric Smoke Detectors:

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
 - a. Primary status.
 - b. Device type.
 - c. Present average value.
 - d. Present sensitivity selected.
 - e. Sensor range (normal, dirty, etc.).

2.5 HEAT DETECTORS

- A. General Requirements for Heat Detectors: Comply with UL 521.
- B. Heat Detector, Fixed-Temperature Type: Actuated by temperature that exceeds a fixed temperature of 190 deg F.
 1. Mounting: Adapter plate for outlet box mounting.
 2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

2.6 NOTIFICATION APPLIANCES

- A. General Requirements for Notification Appliances: The notification devices in this project are existing to remain. In the case during construction some of the notification devices are needed/required to be replaced, Contractor shall coordinate with Fire Alarm vendor to provide/install and connect to notification appliance signal circuits, zoned as indicated, and shall be equipped for mounting as indicated and with screw terminals for system connections.
 1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated and with screw terminals for system connections.
- B. Chimes, Low-Level Output: Vibrating type, 75-dBA minimum rated output.
- C. Horns Speakers: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Comply with UL 464. Speakers shall produce a sound-pressure level of 90 dBA, measured 10 feet from the speaker, using the coded signal prescribed in UL 464 test protocol.

- D. Visible Notification Appliances: Xenon strobe lights comply with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch-high letters on the lens.
1. Rated Light Output:
 - a. 15/30/75/110 cd, selectable in the field.
 2. Mounting: Wall mounted unless otherwise indicated.
 3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.
 4. Flashing shall be in a temporal pattern, synchronized with other units.
 5. Strobe Leads: Factory connected to screw terminals.
 6. Mounting Faceplate: Factory finished, red.
- E. All new devices must be compatible with the existing fire alarm control panel Edwards EST3 and shall be obtained from the existing fire alarm system vendor.

2.7 ADDRESSABLE INTERFACE DEVICE

- A. Description: Microelectronic monitor module, NRTL listed for use in providing a system address for alarm-initiating devices for wired applications with normally open contacts.
- B. Integral Relay: Capable of providing a direct signal to elevator controller to initiate elevator recall, to circuit-breaker shunt trip for power shutdown and other functions as required.

2.8 WIRING

- A. Power Conductors (Above 75 volts) shall be:
1. Copper, THHN, minimum 600 volts, 90°C and shall be installed in Rigid Galvanized Steel Conduit (RGC).
 2. Cable type MI, U.L. listed for 2-hour fire resistance rating.
 3. Minimum wire size shall be No. 12 AWG.
- B. Low Voltage Conductors (75 volts and less) shall be:
1. Multi-conductor cables shall meet the following requirements:
 - a. Type FPLP (plenum type), minimum insulation thickness of 15 mils, minimum temperature 150°C.
 - b. Type FPLP (plenum type) red colored jacket overall with minimum thickness of 25 mils.
 - c. Minimum conductor size in a multi-conductor cable shall be No. 14 AWG.

2.9 RE-PROGRAMMING

- A. Fire Alarm Vendor shall be responsible for providing all necessary, labor, services, equipment and parts to undertake and to perform Fire Alarm System Reprogramming.
- B. Contractor shall coordinate with Fire Alarm Vendor for the reprogramming and install any equipment required of the fire alarm system to correlate with current system.
- C. Reprogramming of fire alarm systems shall be performed by trained technicians.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION

- A. Comply with NFPA 72 for installation of fire-alarm equipment.
- B. Equipment Mounting: Install fire-alarm control unit on wall with tops of cabinets not more than 72 inches above the finished floor.
- C. Smoke- or Heat-Detector Spacing: 1. Smooth ceiling spacing shall not exceed 30 feet. 2. Spacing of detectors for irregular areas, for irregular ceiling construction, and for high ceiling areas shall be determined according to Appendix A in NFPA 72. 3. HVAC: Locate detectors not closer than 3 feet from air-supply diffuser or return-air opening. 4. Lighting Fixtures: Locate detectors not closer than 12 inches from any part of a lighting fixture.
- D. Heat Detectors in Elevator Shafts: Coordinate temperature rating and location with sprinkler rating and location.
- E. Remote Status and Alarm Indicators: Install near each smoke detector and each sprinkler waterflow switch and valve-tamper switch that is not readily visible from normal viewing position.
- F. Audible Alarm-Indicating Devices: Install not less than 6 inches below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille.
- G. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches below the ceiling.
- H. Device Location-Indicating Lights: Locate in public space near the device they monitor.

- I. Connecting to Existing Equipment: Verify that existing fire-alarm system is operational before making changes or connections.
 - 1. Connect new equipment to existing control panel in existing part of the building.
 - 2. Connect new equipment to existing monitoring equipment at the supervising station.
- J. Expand, modify, and supplement existing control equipment as necessary to extend existing control functions to the new points. New components shall be capable of merging with existing configuration without degrading the performance of either system.

3.2 CONNECTIONS

- A. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 3 feet from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.

3.3 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

3.4 FIELD QUALITY CONTROL

- A. Field tests shall be witnessed by authorities having jurisdiction.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.
- C. Perform tests and inspections.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- D. Tests and Inspections:
 - 1. Visual Inspection: Conduct visual inspection prior to testing.

- a. Inspection shall be based on completed Record Drawings and system documentation that is required by NFPA 72 in its "Completion Documents, Preparation" Table in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter.
 - b. Comply with "Visual Inspection Frequencies" Table in the "Inspection" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.
2. System Testing: Comply with "Test Methods" Table in the "Testing" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
 3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.
 4. Test visible appliances for the public operating mode according to manufacturer's written instructions.
 5. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
- E. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.
- F. Fire-alarm system will be considered defective if it does not pass tests and inspections.
- G. Prepare test and inspection reports.

END OF SECTION 283111

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

PERFORMED AT:

SUNY New Paltz College
(6 Buildings & 11 Elevators)
1 Hawk Drive
New Paltz, New York 12561
Adelaide Project#MDS:21250.00-IN
Client Project #SUCF 081058

PREPARED FOR:

John O'Connor
MDSzerbaty Associates Architecture
307 Seventh Avenue, 1501
New York, New York 10001

PREPARED BY:

Louis N. Johnson III
September 22, 2021

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, on September 8th & 9th, 2021 for MDSzerbaty Associates Architecture throughout specific building locations as follows: Haggerty Administration Building elevators 1 & 2, Student Union Building elevators 3-5, Smiley Arts Building elevator 9, Coykendall Science Building elevator K, Lecture Hall Building elevator 8 and Sojourner Truth Library Building elevators main (1), west (2) and east (3), on the SUNY New Paltz Campus located at 1 Hawk Drive, New Paltz, New York 12561. The survey was 1) limited to the following areas as follows: elevators cabs, ceilings, walls and flooring impacted by elevator renovations, elevator shaft/pit areas and mechanical rooms only that could be potentially affecting hazardous materials in repair. All areas outside these locations were not included in this survey and are presumed asbestos-containing materials (PACM). Elevators were shown by elevator company (Dan) work scope described by MDSzerbaty via email; and 2) a visual inspection/assessment for hazardous materials throughout accessible interior spaces of the building/structure or portion thereof identified to be demolished, renovated, remodeled or repaired. Certified **Adelaide** personnel (Appendix G), Louis N. Johnson III (NYS Asbestos Inspector/Cert. #08-05954 and EPA Lead-based Paint Inspector/Cert. #LBP-R-1151914-2), performed the visual assessment throughout inspection area(s) identified.

1.2 Executive Summary

Adelaide inspected all areas that will be affected by the proposed scope of work for the elevator modernization for suspect ACM, LBP and PCBs. **Adelaide** collected one hundred and seventy-two (172) suspect asbestos samples/layers, ninety-four (94) XRF readings [including calibrations] and eight (8) suspect PCB samples from the above-mentioned area(s). Twelve (12) samples/homogenous areas tested positive for asbestos, zero (0) XRF readings tested positive for lead-based paint and zero (0) samples tested positive for PCBs.

The following indicates assumed materials due to inaccessibility at the time of the inspection. All “live” electrical wiring/insulation, electrical components and panels/cabinets, fire rated mechanical doors, elevator cab fire rated doors, elevator brake systems/pads throughout each of the elevators and mechanical spaces associated with these specific elevators within the above-referenced buildings are assumed positive for asbestos. Assumed new materials in Sojourner Truth Library 2nd/Main Floor carpeting with mastic for elevators 1 & 2, Lecture Hall Building concourse level carpeting and Haggerty Administration Building 9th floor parquet wood flooring system. PACM & ACM materials to exist outside scope of work. These assumed materials for asbestos-containing materials are recommended to be tested by a licensed NYS inspector and/or remain presumed and abated/removed by a licensed NYS abatement contractor. In addition, if work scope changes and existing materials have not been tested, materials will also be presumed. Additional site visits are recommended prior to start of project.

Survey was limited to the following building elevator locations: Haggerty Administration Building elevators 1 & 2 hall outside elevators and mechanical room for all floors, Student Union Building elevators 3-5 hall outside elevators and mechanical room for all floors, Smiley Arts Building elevator 9 hall outside elevator and mechanical room all floors except 3rd floor (3rd floor not accessible by elevator at this time), Coykendall Science Building elevator K hall outside elevator and mechanical room for all floors, Lecture

Hall Building Elevator 8, hall outside elevator and mechanical room for all floors and Sojourner Truth Library Elevators 1-3 or East, West & Main hall outside elevators and mechanical room for ceiling, floor and wall materials only. Positive ACM & PACM materials do exist outside scope of work. All materials outside scope of work are presumed asbestos-containing materials (PACM) and if found are required to be either tested by a licensed NYS Asbestos Inspector and/or abated/removed and disposed of PACM materials by a licensed NYC Abatement Contractor.

1.2.1 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.

1.2.2 Asbestos-containing Materials (ACM)

- This survey concluded that the materials listed in Section 2.1 tested and/or are assumed ***positive for asbestos***.
- 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.

1.2.3 Lead-based Paint (LBP)

- This survey concluded that the materials listed in Appendix D tested ***negative for lead-based paint***.

1.2.4 PolyChlorinated Biphenyls (PCB)

- This survey concluded that the materials listed in Appendix F 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.

Haggerty Administration Building Elevators 1 & 2

Samples collected by **Adelaide** September 8, 2021

HA	Identified ACM	ACM Location(s)	Approx. Qty.	Condition	Friable? (Yes or No)
11 & 12	9" x 9" Floor Tile & Mastic - Beige	8 th Floor O/S Elevator	10 SF	Good	No
		7 th Floor O/S Elevator	10 SF	Good	No
		6 th Floor O/S Elevator	10 SF	Good	No
		5 th Floor O/S Elevator, under Carpet	10 SF	Good	No
		4 th Floor O/S Elevator	10 SF	Good	No
		3 rd Floor O/S Elevator	10 SF	Good	No
		2 nd Floor O/S Elevator	10 SF	Good	No
PACM	Parquet Wood Flooring System	9 th Floor O/S Elevator	10 SF	Good	No
<i>PACM electrical components and associated wiring/insulation materials, electrical boxes/cabinets, fire rated mechanical doors, elevator cab fire rated doors, elevator brake systems/pads were either active "live electric" and/or by destructive sampling would cause the material to not be operational during the time of the inspection and were not sampled. If this material, or any materials, not sampled during the time of the inspection are to be impacted in anyway by the scope of work, the material areas are required to be sampled by a licensed NYS asbestos inspector prior to any disturbance or remain assumed and be abated/removed by a licensed NYS asbestos abatement contractor. Also identified ACM/PACM materials continue outside scope of work.</i>					

Student Union Building Elevators 3-5

Samples collected by **Adelaide** September 8, 2021

HA	Identified ACM	ACM Location(s)	Approx. Qty.	Condition	Friable? (Yes or No)
07 & 08	9x9 Floor Tile & Mastic	3 rd Floor O/S Elevator	10 SF	Good	No
PACM	New Wood Flooring System	4 th Floor O/S Elevator	10 SF	Good	No
PACM	New Ceramic Flooring	2 nd Floor O/S Elevator	10 SF	Good	Yes
<i>PACM electrical components and associated wiring/insulation materials, electrical boxes/cabinets, fire rated mechanical doors, elevator cab fire rated doors, elevator brake systems/pads were either active "live electric" and/or by destructive sampling would cause the material to not be operational during the time of the inspection and were not sampled. If this material, or any materials, not sampled during the time of the inspection are to be impacted in anyway by the scope of work, the material areas are required to be sampled by a licensed NYS asbestos inspector prior to any disturbance or remain assumed and be abated/removed by a licensed NYS asbestos abatement contractor. Also identified ACM/PACM materials continue outside scope of work.</i>					

Smiley Arts Building Elevator 9Samples collected by **Adelaide** September 8, 2021

HA	Identified ACM	ACM Location(s)	Approx. Qty.	Condition	Friable? (Yes or No)
HA 11 & 12	2 nd Layer 9" x 9" Floor Tiles & Mastic, Fiberboard, under Non-ACM 18" x 18" Floor Tiles	Elevator 9 Cab	40 SF	Good	No
<i>PACM electrical components and associated wiring/insulation materials, electrical boxes/cabinets, fire rated mechanical doors, elevator cab fire rated doors, elevator brake systems/pads were either active "live electric" and/or by destructive sampling would cause the material to not be operational during the time of the inspection and were not sampled. If this material, or any materials, not sampled during the time of the inspection are to be impacted in anyway by the scope of work, the material areas are required to be sampled by a licensed NYS asbestos inspector prior to any disturbance or remain assumed and be abated/removed by a licensed NYS asbestos abatement contractor. Also identified ACM/PACM materials continue outside scope of work.</i>					

Coykendall Science Building Elevator KSamples collected by **Adelaide** September 8, 2021

HA	Identified ACM	ACM Location(s)	Approx. Qty.	Condition	Friable? (Yes or No)
<i>PACM electrical components and associated wiring/insulation materials, electrical boxes/cabinets, fire rated mechanical doors, elevator cab fire rated doors, elevator brake systems/pads were either active "live electric" and/or by destructive sampling would cause the material to not be operational during the time of the inspection and were not sampled. If this material, or any materials, not sampled during the time of the inspection are to be impacted in anyway by the scope of work, the material areas are required to be sampled by a licensed NYS asbestos inspector prior to any disturbance or remain assumed and be abated/removed by a licensed NYS asbestos abatement contractor. Also identified ACM/PACM materials continue outside scope of work.</i>					

Lecture Hall Building Elevator 8Samples collected by **Adelaide** September 9, 2021

HA	Identified ACM	ACM Location(s)	Approx. Qty.	Condition	Friable? (Yes or No)
05 & 06	9" x 9" Floor Tiles & Mastic - Beige	Projection Floor, Projection Room	10 SF	Damaged	No
07	12" x 12" Floor Tiles - Beige	SB Floor Hall O/S Elevator	10 SF	Good	No
09 & 10	9" x 9" Floor Tiles & Mastic - Brown	Ground Floor Hall O/S Elevator	10 SF	Good	No
13	Bottom Layer 9" x 9" Floor Tiles, on Wood, under Non-ACM Rubber Tile	Elevator 8 Cab Floor	40 SF	Good	No
PACM	Carpet Mastic	Concourse Floor Hall O/S Elevator	10 SF	Good	No

HA	Identified ACM	ACM Location(s)	Approx. Qty.	Condition	Friable? (Yes or No)
<i>PACM electrical components and associated wiring/insulation materials, electrical boxes/cabinets, fire rated mechanical doors, elevator cab fire rated doors, elevator brake systems/pads were either active "live electric" and/or by destructive sampling would cause the material to not be operational during the time of the inspection and were not sampled. If this material, or any materials, not sampled during the time of the inspection are to be impacted in anyway by the scope of work, the material areas are required to be sampled by a licensed NYS asbestos inspector prior to any disturbance or remain assumed and be abated/removed by a licensed NYS asbestos abatement contractor. Also identified ACM/PACM materials continue outside scope of work.</i>					

Sojourner Truth Building Elevators 1-3 Main (1), West (2) & East (3)

Samples collected by **Adelaide** September 9, 2021

HA	Identified ACM	ACM Location(s)	Approx. Qty.	Condition	Friable? (Yes or No)
PACM	Carpet Mastic	Main/2 nd Floor Library O/S Elevator 1 Main	10 SF	Good	No
		Main/2 nd Floor Library O/S Elevator 2 West	10 SF	Good	No
<i>PACM electrical components and associated wiring/insulation materials, electrical boxes/cabinets, fire rated mechanical doors, elevator cab fire rated doors, elevator brake systems/pads were either active “live electric” and/or by destructive sampling would cause the material to not be operational during the time of the inspection and were not sampled. If this material, or any materials, not sampled during the time of the inspection are to be impacted in anyway by the scope of work, the material areas are required to be sampled by a licensed NYS asbestos inspector prior to any disturbance or remain assumed and be abated/removed by a licensed NYS asbestos abatement contractor. Also identified ACM/PACM materials continue outside scope of work.</i>					

2.2 Summary of Identified Non-ACM

Haggerty Administration Building Elevators 1 & 2

Samples collected by **Adelaide** September 8, 2021

Identified Non-ACM	Sample Location(s) & HA's
2' x 2' Suspended Ceiling Tiles	6 th Floor Hall O/S Elevators HA 1
	2 nd Floor Hall O/S Elevators HA 1
Sheetrock/Drywall & Joint Compound Walls	5 th Floor O/S Elevators HA 2 & 3
	2 nd Floor O/S Elevators HA 2 & 3
Brick Mortar - Floor	1 st Floor O/S Elevators HA 4
CMU Mortar - Walls	9 th Floor MER Perimeter Walls HA 5
	Elevator Pit Perimeter Walls HA 5
Cove Base Molding & Adhesive	8 th Floor Hall O/S Elevators HA 6 & 7
	4 th Floor Hall O/S Elevators HA 6 & 7
Cove Base Molding & Adhesive	Basement Floor Hall O/S Elevators HA 8 & 9
Concrete Slab	5 th Floor Hall O/S Elevators HA 10
	Basement Floor Hall O/S Elevators HA 10
12" x 12" Floor Tile & Mastic - Grey	Basement Hall O/S Elevators HA 13 & 14

Identified Non-ACM	Sample Location(s) & HA's
Carpet Mastic	Elevator Cab Floor, on Wood HA 15

Student Union Building Elevators 3-5

Samples collected by **Adelaide** September 8, 2021

Identified Non-ACM	Sample Location(s) & HA's
2" x 4" Suspended Ceiling Tile	3 rd Floor Hall O/S Elevators HA 1
	2 nd Floor Hall O/S Elevators HA 1
Sheetrock/Drywall & Joint Compound Walls	3 rd Floor Hall O/S Elevators HA 2 & 3
	Basement Floor Hall O/S Elevators HA 2 & 3
CMU Mortar - Walls	4 th Floor MER Perimeter Walls HA 4
	Elevator Shaft/Pit Perimeter Walls HA 4
Cove Base Molding & Adhesive	3 rd Floor Hall O/S Elevators HA 5 & 6
12" x 12" Floor Tiles & Mastic - Grey	Basement Hall O/S Elevators HA 9 & 10
Concrete Slab	3 rd Floor Hall O/S Elevators HA 11
	Basement Hall O/S Elevators HA 11
12" x 12" Floor Tiles & Mastic - Beige	Elevator Cab Floor HA 12 & 13

Smiley Arts Building Elevator 9

Samples collected by **Adelaide** September 8, 2021

Identified Non-ACM	Sample Location(s) & HA's
2' x 2' & 2' x 4' Suspended Ceiling Tiles	2 nd Floor Hall O/S Elevator HA 1
	Basement Floor Hall O/S Elevator HA 1
Plaster Walls – Both Layers	2 nd Floor Hall O/S Elevator HA 2 & 3
	1 st Floor Hall O/S Elevator HA 2 & 3
	Basement Floor Hall O/S Elevator HA 2 & 3
CMU Mortar - Walls	4 th Floor MER Perimeter Walls HA 4
	Elevator Shaft/Pit Perimeter Walls HA 4
Cove Base Molding & Adhesive	2 nd Floor Hall O/S Elevator HA 5 & 6
	Basement Floor Hall O/S Elevator HA 5 & 6
12" x 12" Floor Tiles & Mastic - Grey	2 nd Floor Hall O/S Elevator HA 7 & 8
	Basement Floor Hall O/S Elevator HA 7 & 8
Concrete Slab	2 nd Floor Hall O/S Elevator HA 9
	Basement Floor Hall O/S Elevator HA 9
Bottom Layer – Fiber Board	Elevator Cab Floor HA 10
Top Layer – 18" x 18" Floor Tiles & Mastic	Elevator Cab Floor HA 13 & 14

Coykendall Science Building Elevator K

Samples collected by **Adelaide** September 8, 2021

Identified Non-ACM	Sample Location(s) & HA's
2' x 2' & 2' x 4' Suspended Ceiling Tiles	2 nd Floor Hall O/S Elevator HA 1
	Basement Floor Hall O/S Elevator HA 1
Sheetrock/Drywall & Joint Compound Walls	Penthouse MER Perimeter Wall HA 2 & 3
	Basement Floor Hall O/S Elevator HA 2 & 3
CMU Mortar - Walls	Penthouse MER Perimeter Walls HA 4

Identified Non-ACM	Sample Location(s) & HA's
	Elevator Shaft/Pit Perimeter Walls HA 4
Cove Base Molding & Adhesive	3 rd Floor Hall O/S Elevator HA 5 & 6
	1 st Floor Hall O/S Elevator HA 5 & 6
12" x 12" Floor Tiles & Mastic Blue/Grey	3 rd Floor Hall O/S Elevator HA 7 & 8
	1 st Floor Hall O/S Elevator HA 7 & 8
Concrete Slab	3 rd Floor Hall O/S Elevator HA 9
	1 st Floor Hall O/S Elevator HA 9
12" x 12" Floor Tiles & Mastic – Grey	Elevator Cab Floor HA 10 & 11

Lecture Hall Building Elevator 8

Samples collected by **Adelaide** September 9, 2021

Identified Non-ACM	Sample Location(s) & HA's
CMU Mortar - Walls	Penthouse MER Perimeter Walls – HA 1
	Ground Hall O/S Elevator Wall – HA 1
Cove Base Molding & Adhesive	Projection Floor O/S Elevator – HA 2 & 3
	SB Floor O/S Elevator – HA 2 & 3
Concrete Slab	Penthouse MER Floor – HA 4
	Ground Floor O/S Elevator Floor – HA 4
12" x 12" Floor Tile Mastic	SB Floor O/S Elevator – HA 8
Top Layer Rubber Floor Tiles & Mastic - Grey	Elevator 8 Cab Floor – HA 11 & 12

Sojourner Truth Building Elevators 1-3 Main (1), West (2) & East (3)

Samples collected by **Adelaide** September 9, 2021

Identified Non-ACM	Sample Location(s) & HA's
Sheetrock/Drywall & Joint Compound Walls	2 nd Floor East Hall O/S Elevator 3 HA 1 & 2
	1 st Floor West Hall O/S Elevator 2 HA 1 & 2
CMU Mortar - Walls	1 st Floor East MER Perimeter Wall – HA 3
	1 st Floor West MER Perimeter Wall – HA 3
Cove Base Molding & Adhesive	1 st Floor East MER Wall – HA 4 & 5
Cove Base Molding & Adhesive	Concourse Level O/S Main Elevator 1 – HA 6 & 7
	1 st Floor West Hall O/S Elevator 2 – HA 6 & 7
Concrete Slab	2 nd /Main Floor Library O/S Elevator 2 – HA 8
	1 st Floor East Hall O/S Elevator 3 – HA 8
Carpet Mastic	Concourse Level Hall O/S Elevator 1 – HA 9
	Ground Level Hall O/S Elevator 1 – HA 9
Carpet Mastic	2 nd Floor Hall O/S Elevator 3 – HA 10
	1 st Floor Hall O/S Elevator 3 – HA 10
12" x 12" Floor Tiles & Mastic - Beige	1 st Floor Hall O/S Elevator 2 – HA 11 & 12
Carpet Mastic	Elevator 1 Main Cab Floor – HA 13
12" x 12" Floor Tiles & Mastic – Grey	Elevator 2 West Cab Floor – HA 14 & 15
Fiberboard	Elevator 3 East Cab Floor – HA 16

2.3 ACM Photos

<p>Haggerty Administration Building HA 11 & 12 9" x 9" Floor Tiles & Mastic 7.6% & 6.3% Chrysotile</p>	
<p>Haggerty Administration Building PACM Parquet Flooring System</p>	
<p>Student Union Building HA 7 & 8 9" x 9" Floor Tiles & Mastic 5.9% & 9.3% Chrysotile</p>	

Student Union Building
PACM New Wood Flooring
System



Student Union Building
PACM Ceramic Tile Flooring
System



Smiley Arts Building
HA 11 & 12
9" x 9" Floor Tiles & Mastic –
Grey 7.2% & 6.9% Chrysotile



Lecture Hall Building
HA 5 & 6
9" x 9" Floor Tiles & Mastic –
Beige 15.3% & 4.4% Chrysotile






Lecture Hall Building
HA 7
12" x 12" Floor Tiles – Beige
5.7% Chrysotile



Lecture Hall Building
HA 9 & 10
9" x 9" Floor Tiles & Mastic –
Brown 11.9% & 3.3% Chrysotile



<p>Lecture Hall Building HA 13 9" x 9" Floor Tiles 11.9% & 3.3% Chrysotile</p>	
<p>Lecture Hall Building PACM New Carpet Floor System</p>	
<p>Sojourner Truth Library Building PACM New Carpet Floor System</p>	

PACM Typical Electrical Box in
MER



PACM Typical Electrical Cabinet
in MER



PACM Typical Pulley System in
MER



PACM Typical Motor System in MER



PACM Typical Electrical Switch in MER



PACM Typical Electrical & Pulley System above Elevator Cabs



PACM Typical Elevator Motor System



PACM Typical Electrical Conduits in MER



PACM Typical Electrical Components in Cabinets in MER



PACM Typical Electrical Switch
in MER





PACM Typical Fire Door in MER



PACM Typical Electrical
Components on Elevator Cabs



<p>PACM Typical Electrical Panel Systems Inside Elevator</p>	
<p>PACM Typical Elevator Door System</p>	

2.4 Summary of Identified LBP

Based on review of the data generated by the Heuresis (Viken) Corp. Pb200i 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):

Haggerty Administration Building Elevators 1 & 2

Readings collected by **Adelaide** September 8, 2021

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

Student Union Building Elevators 3-5

Readings collected by **Adelaide** September 8, 2021

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

Smiley Arts Building Elevator 9

Readings collected by **Adelaide** September 8, 2021

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

Coykendall Science Building Elevator K

Readings collected by **Adelaide** September 8, 2021

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

Lecture Hall Building Elevator 8

Readings collected by **Adelaide** September 9, 2021

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

Sojourner Truth Building Elevators 1-3 Main (1), West (2) & East (3)

Readings collected by **Adelaide** September 9, 2021

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

2.5 Summary of Identified PCB-containing Materials

Haggerty Administration Building Elevators 1 & 2

Samples collected by **Adelaide** September 8, 2021

Sample #	Location / Description	Material Matrix	Color	Substrate	Analytical Result
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.					

Student Union Building Elevators 3-5

Samples collected by **Adelaide** September 8, 2021

Sample #	Location / Description	Material Matrix	Color	Substrate	Analytical Result
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.					

Smiley Arts Building Elevator 9

Samples collected by **Adelaide** September 8, 2021

Sample #	Location / Description	Material Matrix	Color	Substrate	Analytical Result
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.					

Coykendall Science Building Elevator K

Samples collected by **Adelaide** September 8, 2021

Sample #	Location / Description	Material Matrix	Color	Substrate	Analytical Result
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.					

Lecture Hall Building Elevator 8

Samples collected by **Adelaide** September 9, 2021

Sample #	Location / Description	Material Matrix	Color	Substrate	Analytical Result
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.					

Sojourner Truth Building Elevators 1-3 Main (1), West (2) & East (3)

Samples collected by **Adelaide** September 9, 2021

Sample #	Location / Description	Material Matrix	Color	Substrate	Analytical Result
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.					

2.6 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.

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:

Haggerty Administration Building Elevators 1 & 2

- Ceiling Materials – 2' x 2' Suspended Ceiling Tiles.
- Wall Materials – Sheetrock, Joint Compound, CMU Mortar and Cove Base Molding & Adhesive.
- Flooring Materials – 9" x 9" Floor Tile & Mastic, 12" x 12" Floor Tile & Mastic, Carpet Mastic, Concrete Slab and Brick.
- Presumed Materials (not sampled) – All live electrical (wires/insulation, panels, cabinets, components, etc.), elevator fire doors and fire doors for insulation, elevator brake systems, etc. 9th floor parquet flooring w/mastic/vapor barrier. Additional Visits may be required.

Student Union Building Elevators 3-5

- Ceiling Materials – Suspended Ceiling Tiles.
- Wall Materials – Sheetrock, Joint Compound, CMU Mortar and Cove Base Molding & Adhesive.
- Flooring Materials – 9" x 9" Floor Tile & Mastic, 12" x 12" Floor Tile & Mastic (multiple types) and Concrete Slab.
- Presumed Materials (not sampled) – All live electrical (wires/insulation, panels, cabinets, components, etc.), elevator fire doors and fire doors for insulation, elevator brake systems, etc. 4th and 2nd floor wood and ceramic flooring system. Additional Visits may be required.

Smiley Arts Building Elevator 9

- Ceiling Materials – Suspended Ceiling Tiles.
- Wall Materials – Plaster, Cove Base Molding & Adhesive and CMU Mortar.
- Flooring Materials – 9" x 9" Floor Tiles & Mastic, 12" x 12" Floor Tiles & Mastic, 18" x 18" Floor Tiles & Mastic, Fiberboard and Concrete Slab.
- Presumed Materials (not sampled) – All live electrical (wires/insulation, panels, cabinets, components, etc.), elevator fire doors and fire doors for insulation, elevator brake systems, etc. Additional Visits may be required.

Coykendall Science Building Elevator K

- Ceiling Materials – Suspended Ceiling Tiles.
- Wall Materials – Sheetrock, Joint Compound, Cove Base Molding & Adhesive and CMU Mortar.
- Flooring Materials – 12" x 12" Floor Tiles & Mastic (multiple types) and concrete slab.

- Presumed Materials (not sampled) – All live electrical (wires/insulation, panels, cabinets, components, etc.), elevator fire doors and fire doors for insulation, elevator brake systems, etc. Additional Visits may be required.

Lecture Hall Building Elevator 8

- Wall Materials – CMU Mortar and Cove Base Molding & Adhesive.
- Flooring Materials – 9" x 9" Floor Tiles & Mastic (multiple types), 12" x 12" Floor Tiles & Mastic, Rubber Flooring & Mastic and Concrete Slab.
- Presumed Materials (not sampled) – All live electrical (wires/insulation, panels, cabinets, components, etc.), elevator fire doors and fire doors for insulation, elevator brake systems, etc. Concourse level carpet mastic flooring system. Additional Visits may be required.

Sojourner Truth Building Elevators 1-3 Main (1), West (2) & East (3)

- Wall Materials – Sheetrock, Joint Compound, Cove Base Molding & Adhesive (multiple types) and CMU Mortar.
- Flooring Materials – 12" x 12" Floor Tiles & Mastic (multiple types), Fiberboard, Carpet Mastic and Concrete Slab.
- Presumed Materials (not sampled) – All live electrical (wires/insulation, panels, cabinets, components, etc.), elevator fire doors and fire doors for insulation, elevator brake systems, etc. Main/2nd floor carpet mastic flooring system. Additional Visits may be required.

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.

NEW YORK CITY

Asbestos Control Program (ACP), Title 15, Chapter 1 of the New York City Department of Environmental Protection (NYCDEP) regulates all asbestos abatement activities occurring within the City of New York.

The ACR regulations also require asbestos surveys and abatement work to be performed by a NYCDEP certified asbestos investigator and asbestos workers, respectively.

The New York City Department of Buildings (NYCDOB) requires an ACP notification to be included with the renovation/demolition permit applications. The notification is performed using an ACP 5 or ACP 20/21 forms.

All confirmed ACM will need to be removed prior to any building renovation or demolition. The removal and disposal of ACM must be performed by a NYS-DOL licensed asbestos handling contractor in accordance with Federal, state, and local regulations. Proper notifications must be filed with the US-EPA, NYS-DOL, NYC-DEP and other regulatory agencies prior to performing such activities.

As required by the NYS-DOL and NYC-DEP regulations, the abatement project must be monitored by a NYS-DOL certified project monitor. The project monitor oversees contractor's work practices and also performs pre, during, and final clearance post abatement air sampling in accordance with the state and city regulations.

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

Heuresis (Viken) Corp. Pb200i 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 Heuresis (Viken) Corp. Pb200i 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 Heuresis (Viken) Corp. Pb200i X-Ray Fluorescence (XRF) Analyzer(s) Serial Number 2104, Source date 2/15/21, Serial number 2231, Source date 4/5/19, Serial number 2595, Source date 1/31/20 and/or Serial number 2901, Source date 2/15/21.

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.

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 inspection report is not intended to be used as the sole basis for soliciting pricing for asbestos abatement. An abatement plan, specification, drawing and/or Variances should be developed to identify scope, timing, phasing and remediation means & methods for any asbestos project. The Linear and/or Square Footages (LF / SF) listed within this Report are only approximates. Abatement Contractor(s) are required to visit the building(s) in order to take actual field measurements within each listed location.

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)

CLIENT:
John O'Connor
MDSzerbaty Associates
Architecture
307 Seventh Avenue, 1501
New York, New York 10001

Project #SUCF081058

SURVEY LOCATION:
SUNY NewPaltz College -
6-Buildings, 11-Elevators
1 Hawk Drive
New Paltz, New York 12561

DATE: 09/22/2021

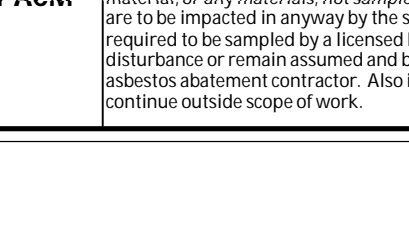
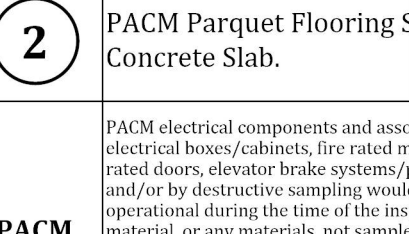
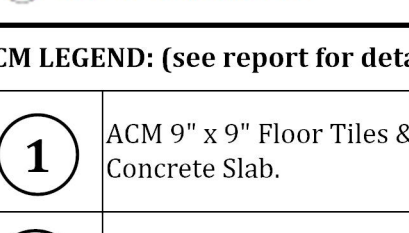
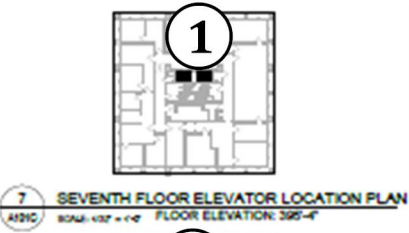
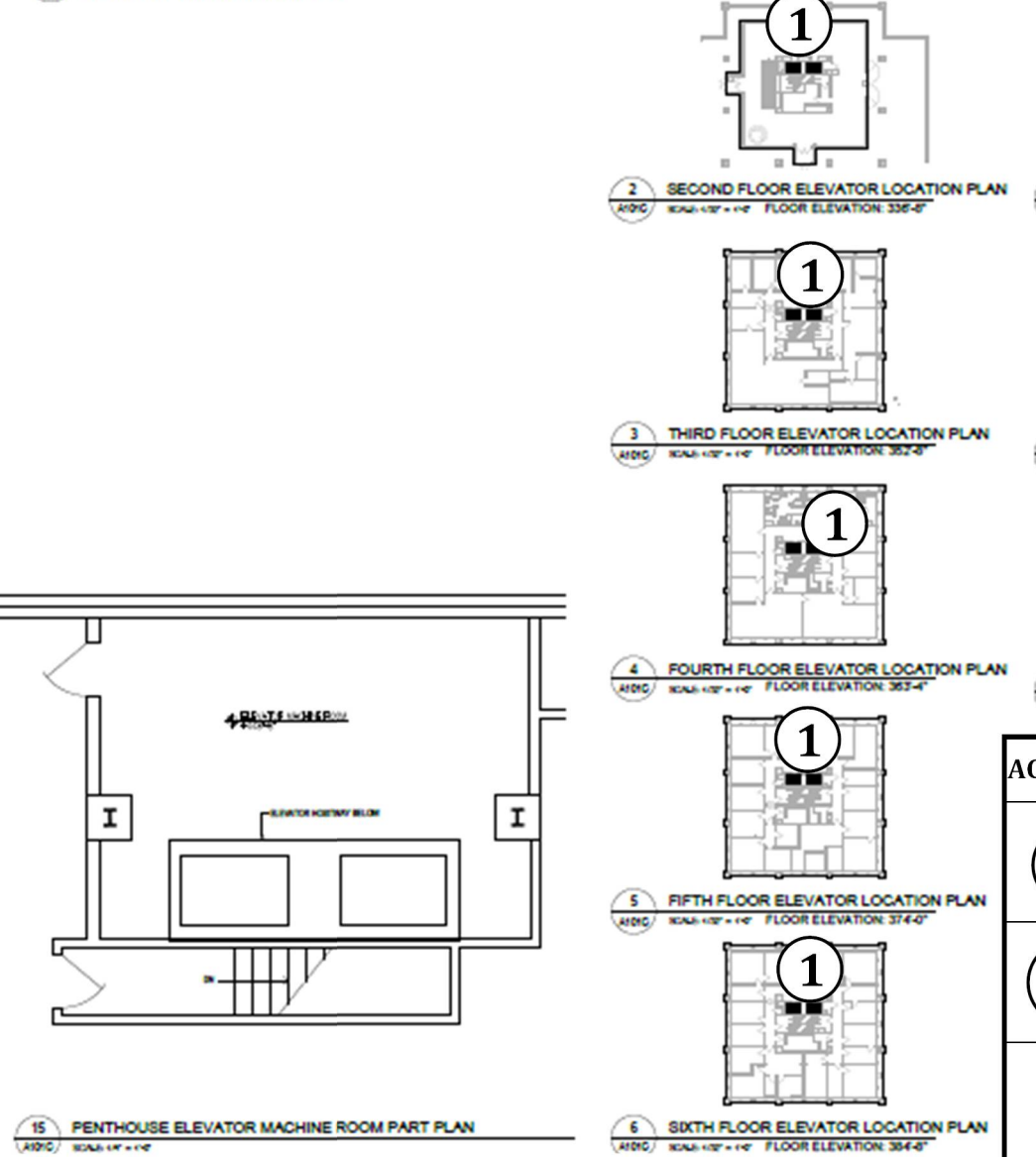
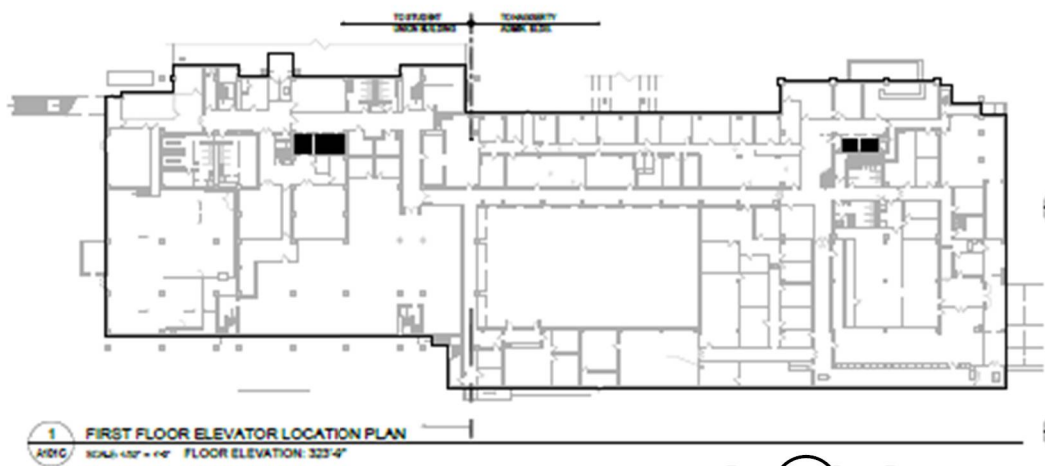
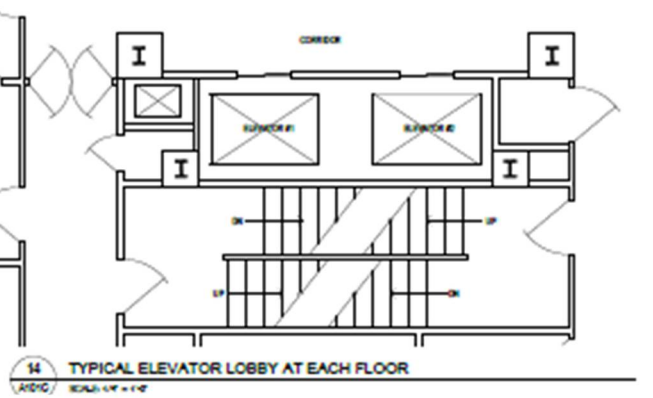
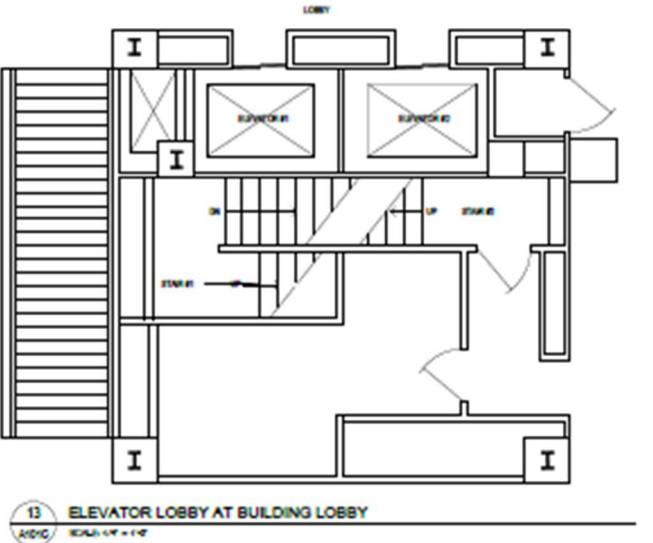
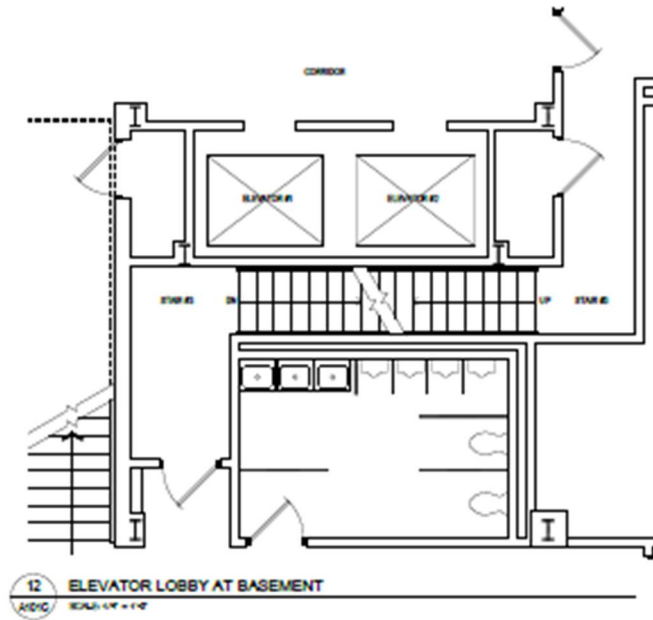
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ISSUED FOR:
Limited HazMat Survey

ADELAIDE PROJECT NO.:
MDS:21250.00-IN

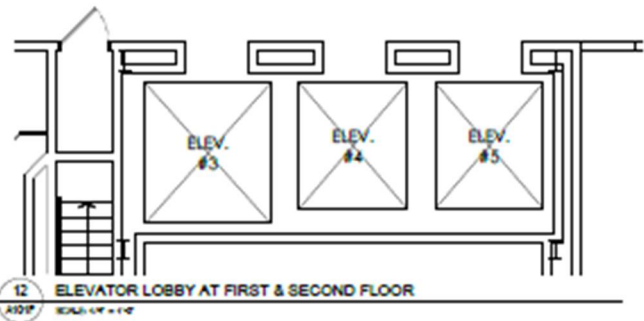
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LNJ3

HAB
ASB-01

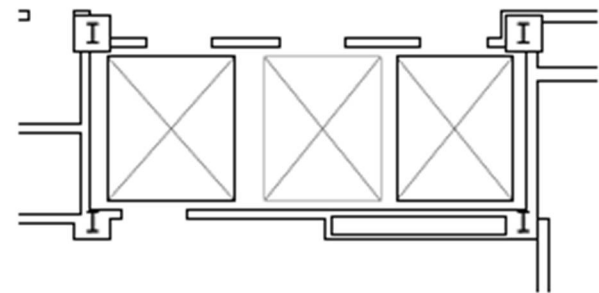


ACM LEGEND: (see report for details)

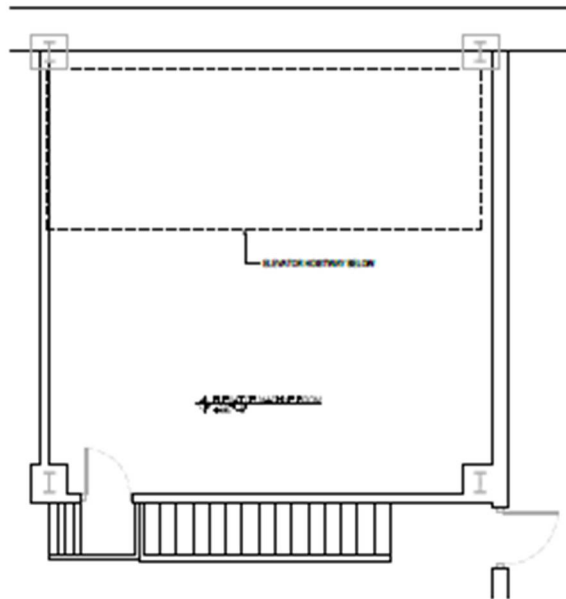
1	ACM 9" x 9" Floor Tiles & Mastic, on Non-ACM Concrete Slab.
2	PACM Parquet Flooring System, on Non-ACM Concrete Slab.
PACM	PACM electrical components and associated wiring/insulation materials, electrical boxes/cabinets, fire rated mechanical doors, elevator cab fire rated doors, elevator brake systems/pads were either active "live electric" and/or by destructive sampling would cause the material to not be operational during the time of the inspection and were not sampled. If this material, or any materials, not sampled during the time of the inspection are to be impacted in anyway by the scope of work, the material areas are required to be sampled by a licensed NYS asbestos inspector prior to any disturbance or remain assumed and be abated/removed by a licensed NYS asbestos abatement contractor. Also identified ACM/PACM materials continue outside scope of work.



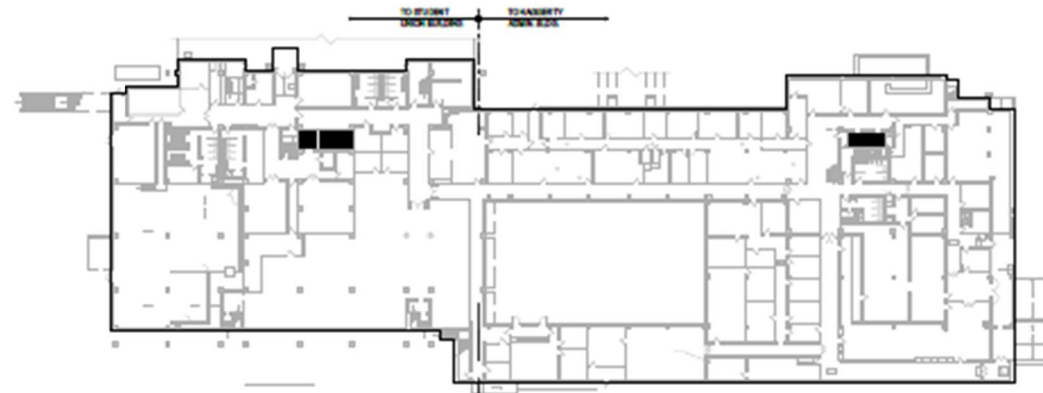
12 ELEVATOR LOBBY AT FIRST & SECOND FLOOR
SCALE: 1/4" = 1'-0"
A109P



13 ELEVATOR LOBBY TYPICAL AT BASEMENT, THIRD & FOURTH FLOORS
SCALE: 1/4" = 1'-0"
A109P



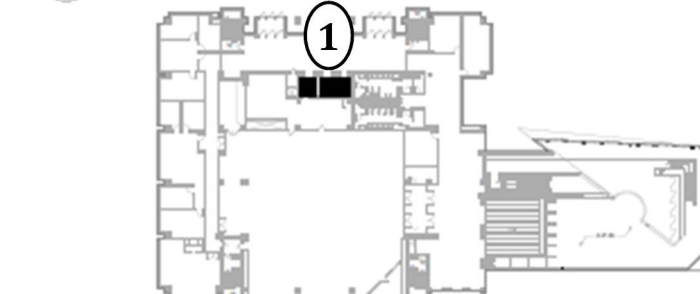
14 ELEVATOR MACHINE ROOM PART PLAN AT PENTHOUSE
SCALE: 1/4" = 1'-0"
A109P



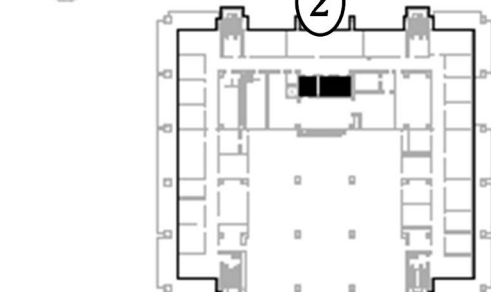
1 FIRST FLOOR ELEVATOR LOCATION PLAN
SCALE: 1/4" = 1'-0" FLOOR ELEVATION: 323'-0"
A109P



2 SECOND FLOOR ELEVATOR LOCATION PLAN
SCALE: 1/4" = 1'-0" FLOOR ELEVATION: 330'-0"
A109P



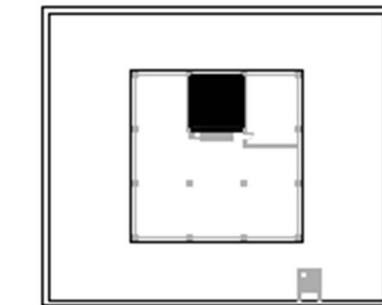
3 THIRD FLOOR ELEVATOR LOCATION PLAN
SCALE: 1/4" = 1'-0" FLOOR ELEVATION: 347'-0"
A109P



4 FOURTH FLOOR ELEVATOR LOCATION PLAN
SCALE: 1/4" = 1'-0" FLOOR ELEVATION: 363'-0"
A109P



5 FIFTH FLOOR ELEVATOR LOCATION PLAN
SCALE: 1/4" = 1'-0" FLOOR ELEVATION: 375'-0"
A109P



6 PENTHOUSE ELEVATOR MACHINE ROOM LOCATION PLAN
SCALE: 1/4" = 1'-0" FLOOR ELEVATION: 387'-0"
A109P

ACM LEGEND: (see report for details)

1	ACM 9" x 9" Floor Tiles & Mastic, on Non-ACM Concrete Slab.
2	PACM Wood Flooring System, on Non-ACM Concrete Slab.
3	PACM Ceramic Floor Tile System, on Non-ACM Concrete Slab.
PACM	PACM electrical components and associated wiring/insulation materials, electrical boxes/cabinets, fire rated mechanical doors, elevator cab fire rated doors, elevator brake systems/pads were either active "live electric" and/or by destructive sampling would cause the material to not be operational during the time of the inspection and were not sampled. If this material, or any materials, not sampled during the time of the inspection are to be impacted in anyway by the scope of work, the material areas are required to be sampled by a licensed NYS asbestos inspector prior to any disturbance or remain assumed and be abated/removed by a licensed NYS asbestos abatement contractor. Also identified ACM/PACM materials continue outside scope of work.

CLIENT:
John O'Connor
MDSzerbaty Associates
Architecture
307 Seventh Avenue, 1501
New York, New York 10001

Project #SUCF081058

SURVEY LOCATION:
SUNY NewPaltz College -
6-Buildings, 11-Elevators
1 Hawk Drive
New Paltz, New York 12561

DATE: 09/22/2021

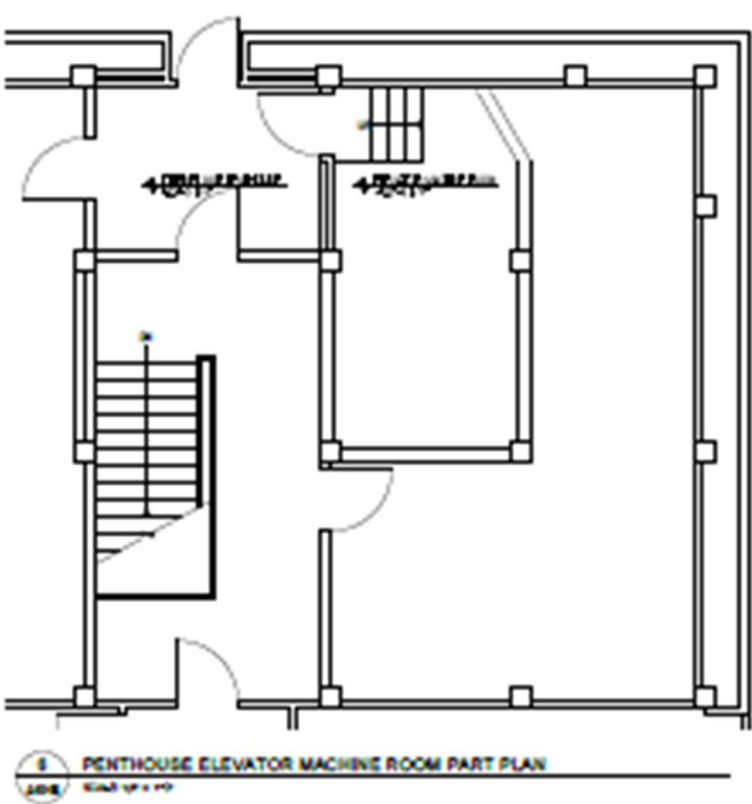
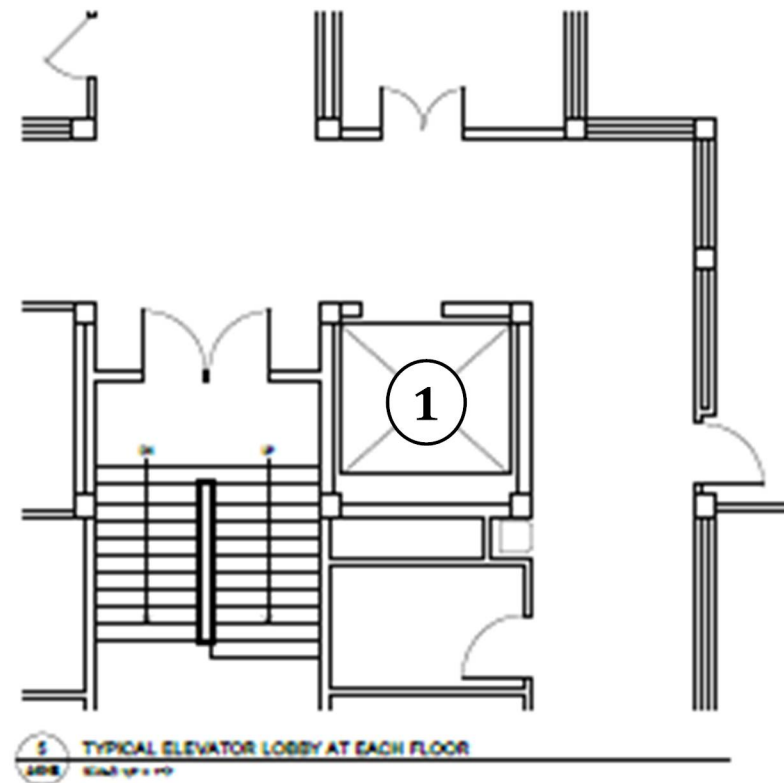
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MDS:21250.00-IN

DRAWING PREPARED BY:
LNJ3

SUB
ASB-02



ACM LEGEND: (see report for details)	
1	ACM 2nd Layer 9" x 9" Floor Tiles & Mastic, on Fiberboard, under Non-ACM 18" x 18" Floor Tiles.
PACM	PACM electrical components and associated wiring/insulation materials, electrical boxes/cabinets, fire rated mecnical doors, elevator cab fire rated doors, elevator brake systems/pads were either active "live electric" and/or by destructive sampling would cause the material to not be operational during the time of the inspection and were not sampled. f this material, or any materials, not sampled during the time of the inspection are to be impacted in anyway by the sco of work, the material areas are required to be sampled by a licensed NYS asbestos inspector prior to any disturbanc or remain assumed and be abated/removed by a licensed NYS asbestos abatement contractor. Also identified ACM/ACM materials continue outside scope of work.



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

CLIENT:
John O'Connor
MDSzerbaty Associates
Architecture
307 Seventh Avenue, 1501
New York, New York 10001

Project #SUCF081058

SURVEY LOCATION:
SUNY NewPaltz College -
6-Buildings, 11-Elevators
1 Hawk Drive
New Paltz, New York 12561

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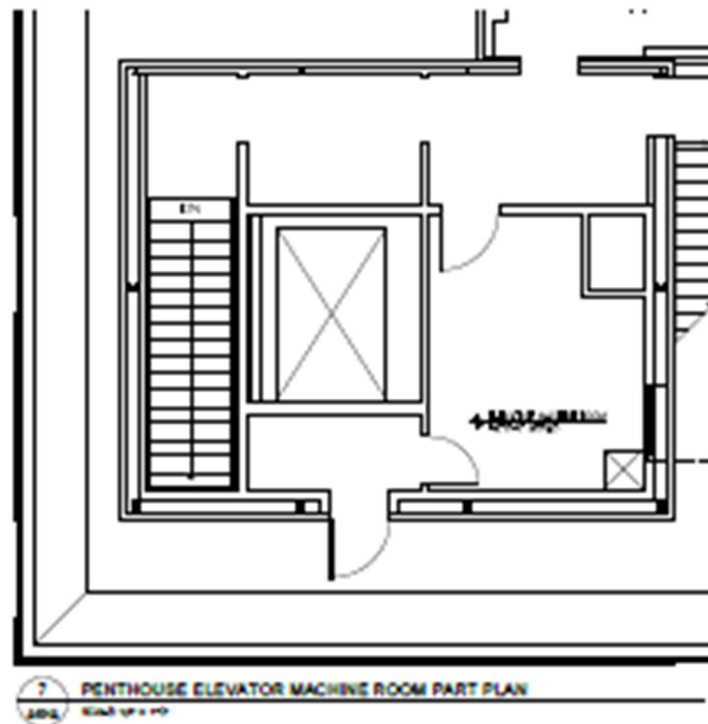
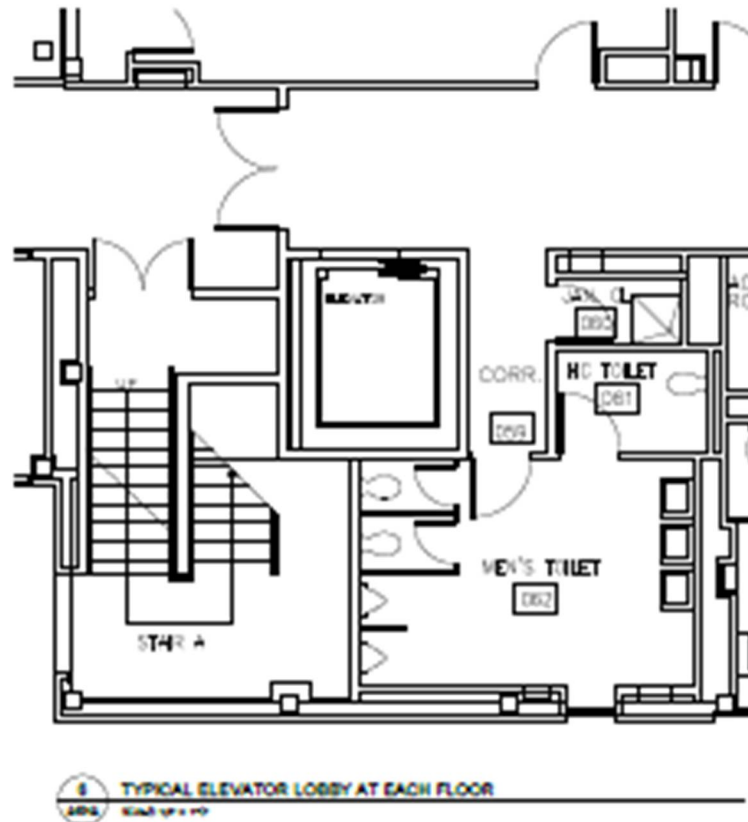
ISSUED FOR:

Limited HazMat Survey

ADELAIDE PROJECT NO.:
MDS:21250.00-IN

DRAWING PREPARED BY:
LNJ3

**SAB
ASB-03**



ACM LEGEND: (see report for details)

PACM PACM electrical components and associated wiring/insulation materials, electrical boxes/cabinets, fire rated mechanical doors, elevator cab fire rated doors, elevator brake systems/pads were either active "live electric" and/or by destructive sampling would cause the material to not be operational during the time of the inspection and were not sampled. If this material, or any materials, not sampled during the time of the inspection are to be impacted in anyway by the scope of work, the material areas are required to be sampled by a licensed NYS asbestos inspector prior to any disturbance or remain assumed and be abated/removed by a licensed NYS asbestos abatement contractor. Also identified ACM/PACM materials continue outside scope of work.



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John O'Connor
MDSzerbaty Associates
Architecture
307 Seventh Avenue, 1501
New York, New York 10001

Project #SUCF081058

SURVEY LOCATION:
SUNY NewPaltz College -
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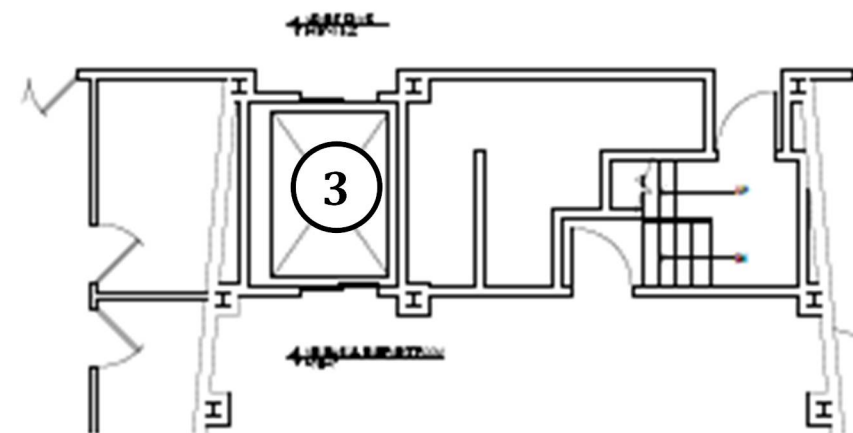
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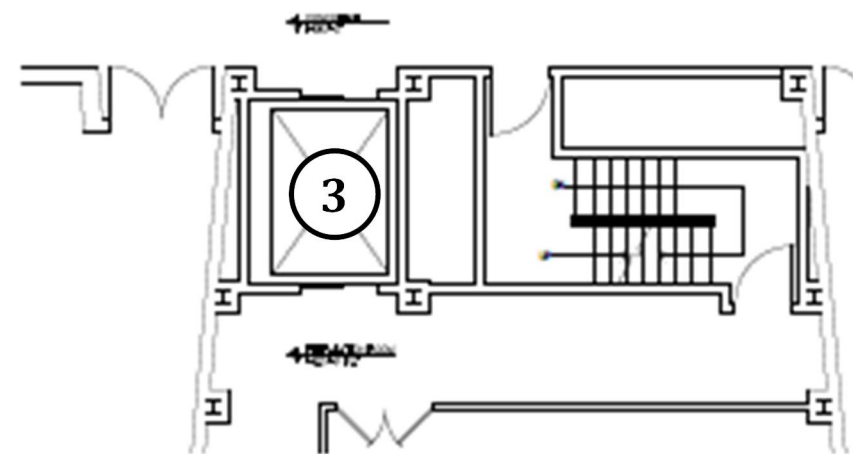
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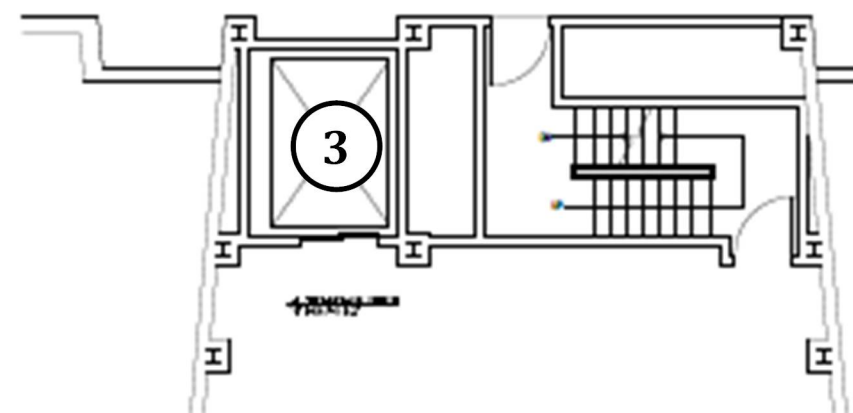
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LNJ3



5 ELEVATOR LOBBY AT MECHANICAL ROOM AND GROUND FLOOR
LBB Scale: 1/8" = 1'-0"



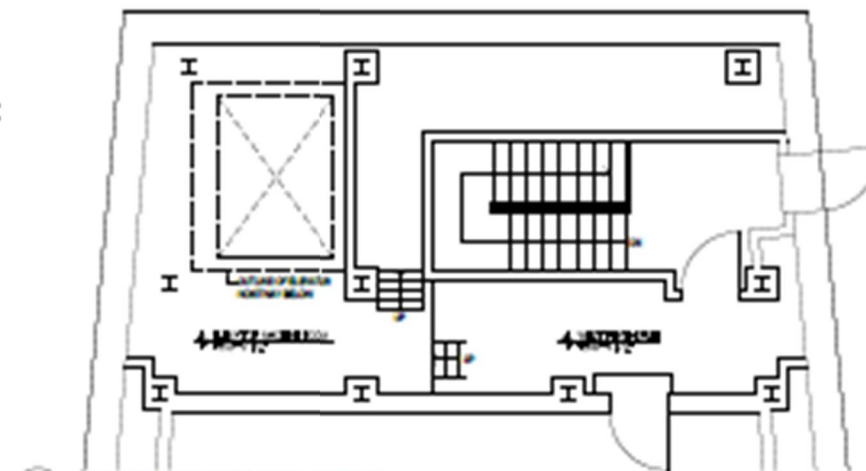
6 ELEVATOR LOBBY AT PREPARATION ROOM AND CONCOURSE
LBB Scale: 1/8" = 1'-0"



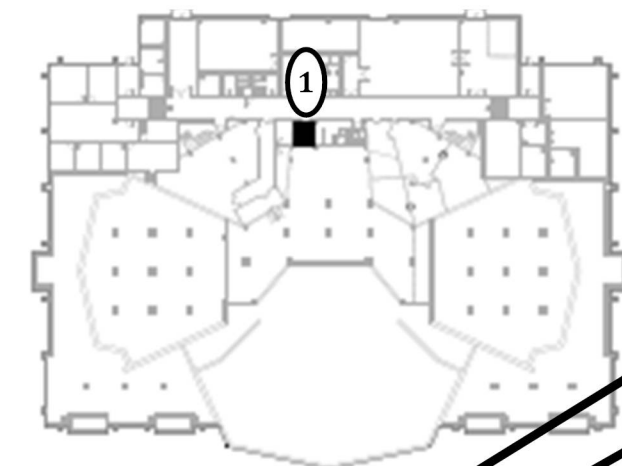
7 TYPICAL ELEVATOR LOBBY AT TECHNICIAN'S OFFICE
LBB Scale: 1/8" = 1'-0"

ACM LEGEND: (see report for details)

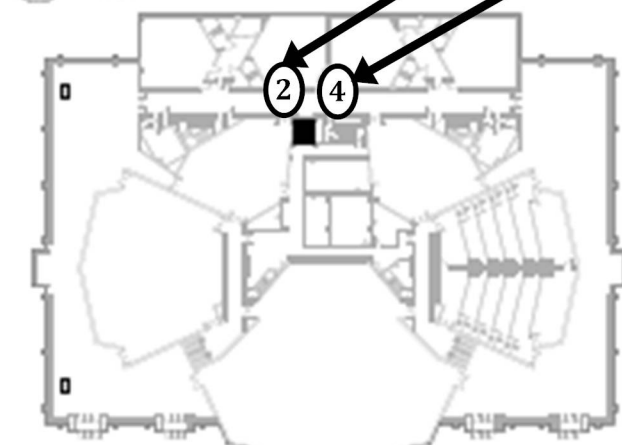
- | | |
|------|---|
| 1 | ACM 9" x 9" Floor Tiles & Mastic, on Non-ACM Concrete Slab. |
| 2 | ACM 12" x 12" Floor Tiles, on Non-ACM Concrete Slab. |
| 3 | Bottom Layer 9" x 9" Floor Tiles, on Wood, under Non-ACM Rubber Tile. |
| 4 | PACM Carpet Mastic, on Non-ACM Concrete Slab. |
| PACM | PACM electrical components and associated wiring/insulation materials, electrical boxes/cabinets, fire rated mechanical doors, elevator cab fire rated doors, elevator brake systems/pads were either active "live electric" and/or by destructive sampling would cause the material to not be operational during the time of the inspection and were not sampled. If this material, or any materials, not sampled during the time of the inspection are to be impacted in anyway by the scope of work, the material areas are required to be sampled by a licensed NYS asbestos inspector prior to any disturbance or remain assumed and be abated/removed by a licensed NYS asbestos abatement contractor. Also identified ACM/PACM materials continue outside scope of work. |



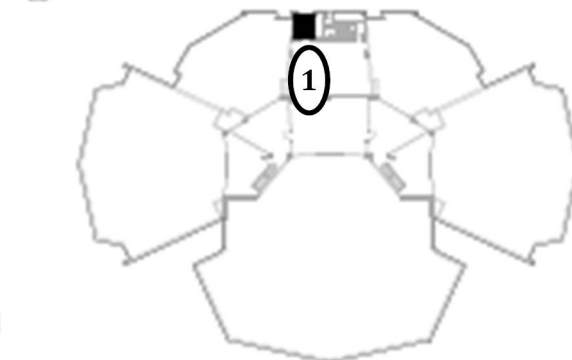
8 PLAN AT ELEVATOR MACHINE ROOM
LBB Scale: 1/8" = 1'-0"



1 ELEVATOR LOCATION PLAN
LBB Scale: 1/8" = 1'-0"



2 ELEVATOR LOCATION PLAN
LBB Scale: 1/8" = 1'-0"



3 ELEVATOR LOCATION PLAN
LBB Scale: 1/8" = 1'-0"



4 ELEVATOR MACHINE ROOM LOCATION PLAN
LBB Scale: 1/8" = 1'-0"

SB or
Preparation
Concourse

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

CLIENT:
John O'Connor
MDSzerbaty Associates
Architecture
307 Seventh Avenue, 1501
New York, New York 10001

Project #SUCF081058

SURVEY LOCATION:
SUNY NewPaltz College -
6-Buildings, 11-Elevators
1 Hawk Drive
New Paltz, New York 12561

DATE: 09/22/2021

DRAWING VERSION: No. 1

ISSUED FOR:
Limited HazMat Survey

ADELAIDE PROJECT NO.:
MDS:21250.00-IN

DRAWING PREPARED BY:
LNJ3

LHB
ASB-05

CLIENT:
John O'Connor
MDSzerbaty Associates
Architecture
307 Seventh Avenue, 1501
New York, New York 10001

Project #SUCF081058

SURVEY LOCATION:
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1 Hawk Drive
New Paltz, New York 12561

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DRAWING VERSION: No. 1

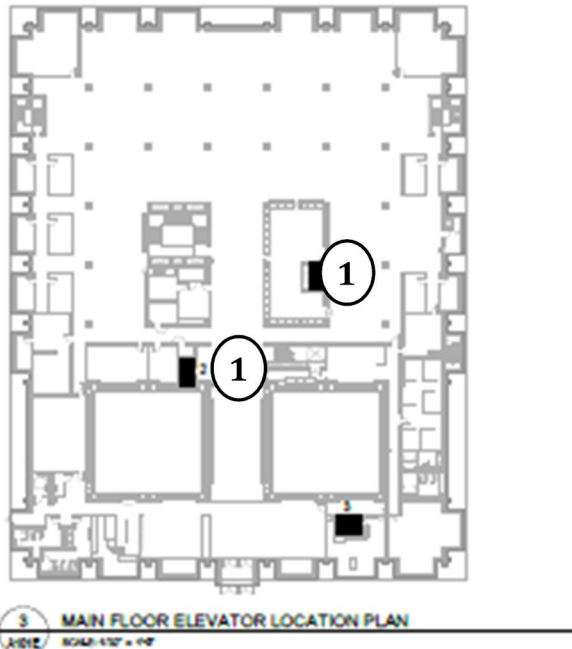
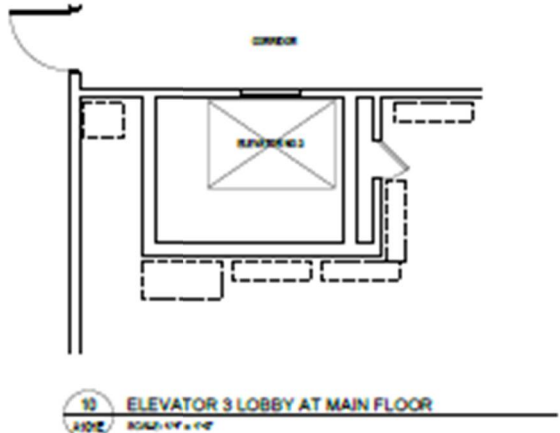
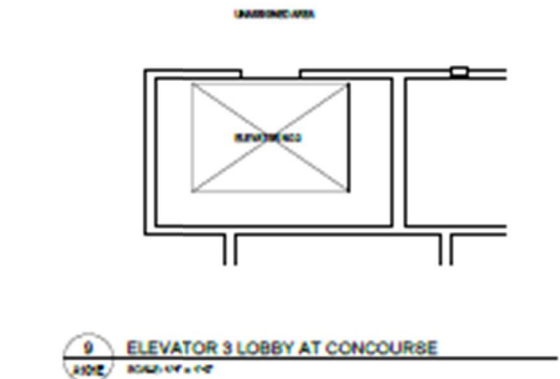
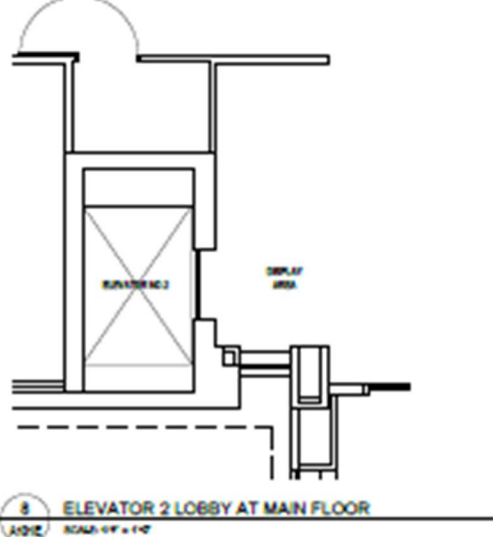
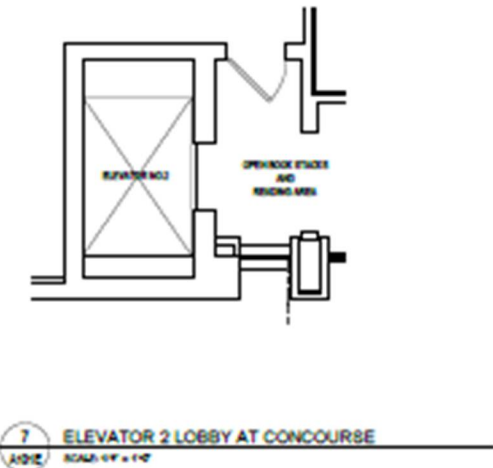
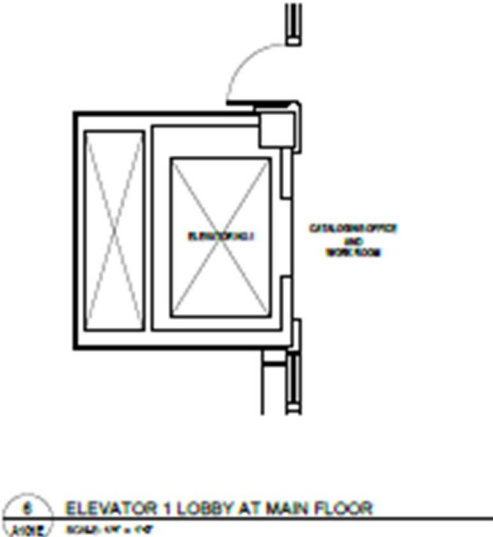
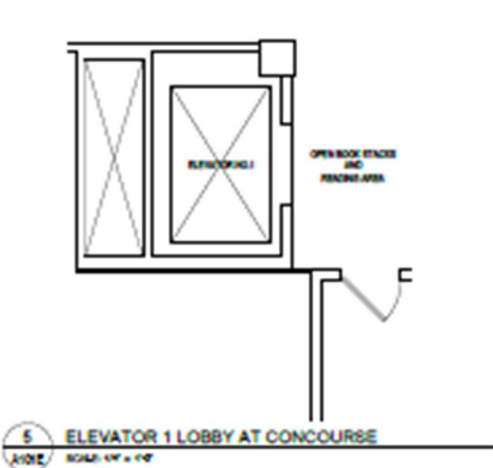
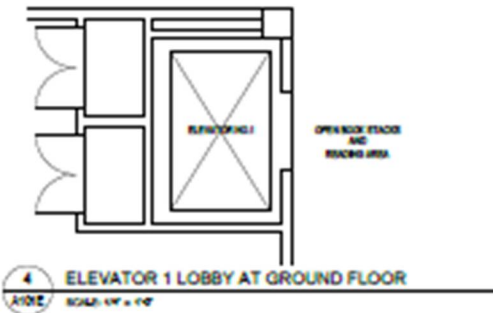
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ADELAIDE PROJECT NO.:
MDS:21250.00-IN

DRAWING PREPARED BY:
LNJ3

STL
ASB-06

ACM LEGEND: (see report for details)	
1	PACM Carpet Mastic, on Non-ACM Concrete Slab.
PACM	PACM electrical components and associated wiring/insulation materials, electrical boxes/cabinets, fire rated mechanical doors, elevator cab fire rated doors, elevator brake systems/pads were either active “live electric” and/or by destructive sampling would cause the material to not be operational during the time of the inspection and were not sampled. If this material, or any materials, not sampled during the time of the inspection are to be impacted in anyway by the scope of work, the material areas are required to be sampled by a licensed NYS asbestos inspector prior to any disturbance or remain assumed and be abated/removed by a licensed NYS asbestos abatement contractor. Also identified ACM/PACM materials continue outside scope of work.



APPENDIX B
SAMPLE LOCATION MAP(S)

CLIENT:
John O'Connor
MDSzerbaty Associates
Architecture
307 Seventh Avenue, 1501
New York, New York 10001

Project #SUCF081058

SURVEY LOCATION:
SUNY NewPaltz College -
6-Buildings, 11-Elevators
1 Hawk Drive
New Paltz, New York 12561

DATE: 09/22/2021

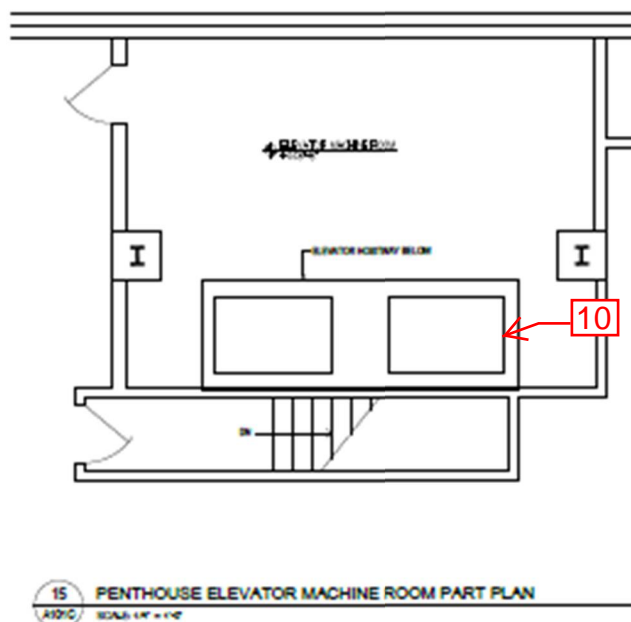
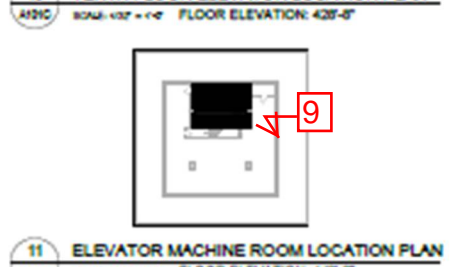
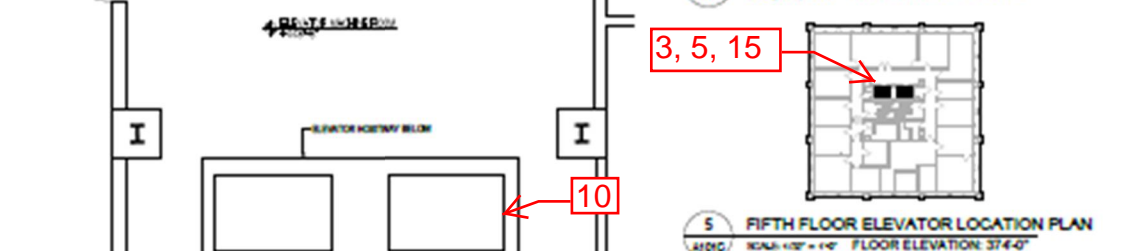
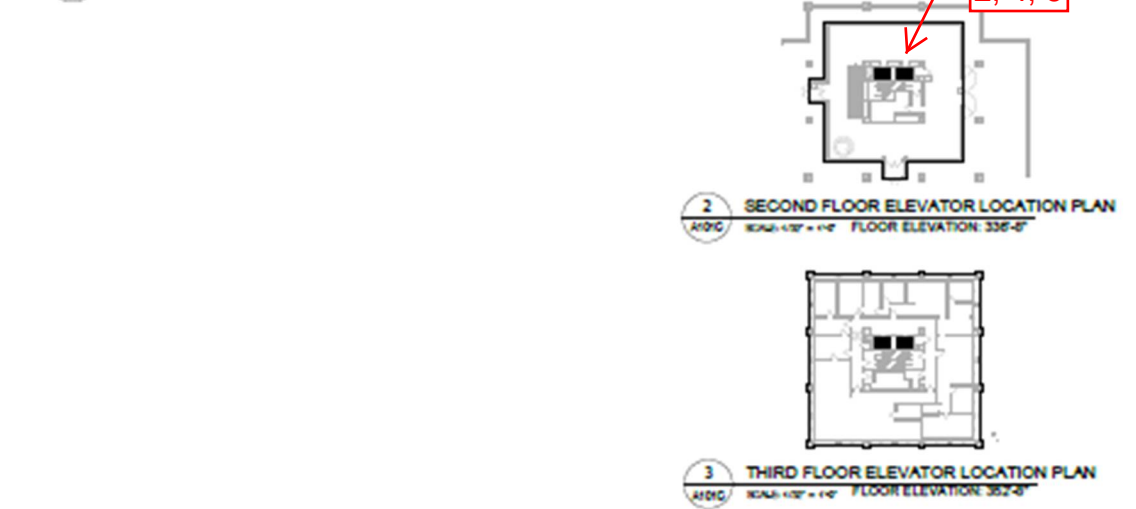
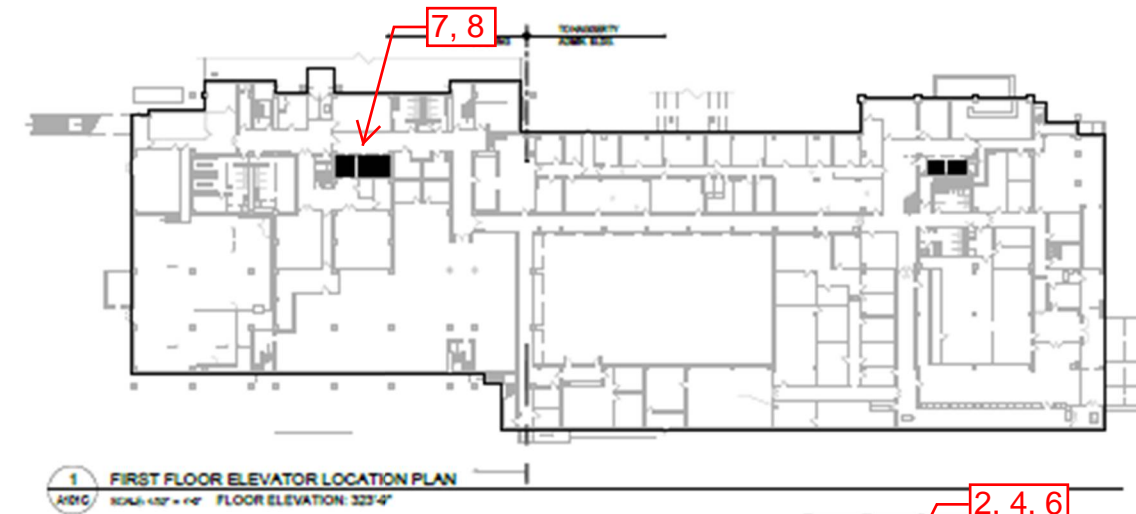
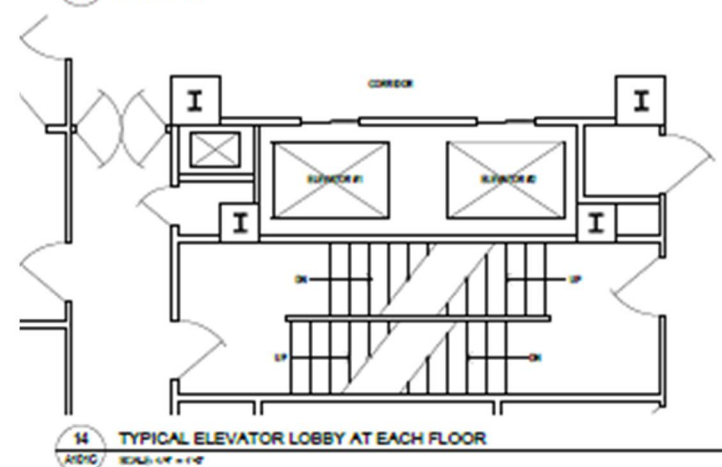
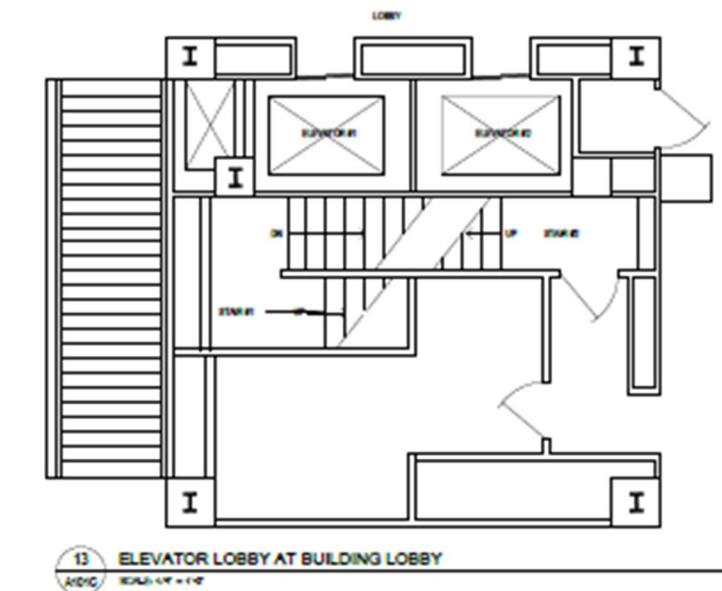
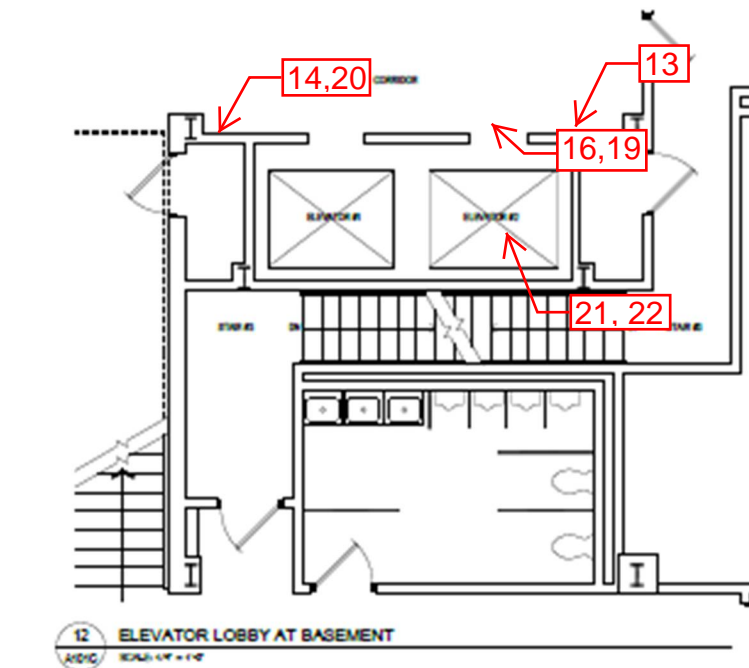
DRAWING VERSION: No. 1

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Limited HazMat Survey

ADELAIDE PROJECT NO.:
MDS:21250.00-IN

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LNJ3

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SL-01



CLIENT:
John O'Connor
MDSzerbaty Associates
Architecture
307 Seventh Avenue, 1501
New York, New York 10001

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SURVEY LOCATION:
SUNY NewPaltz College -
6-Buildings, 11-Elevators
1 Hawk Drive
New Paltz, New York 12561

DATE: 09/22/2021

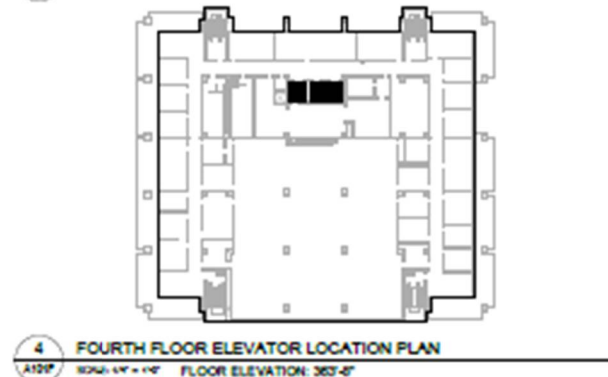
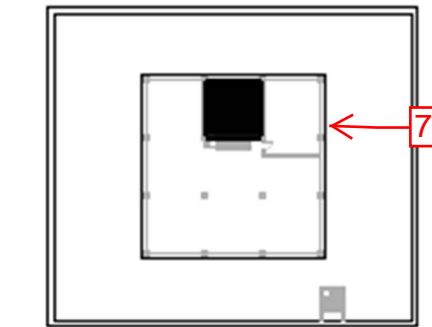
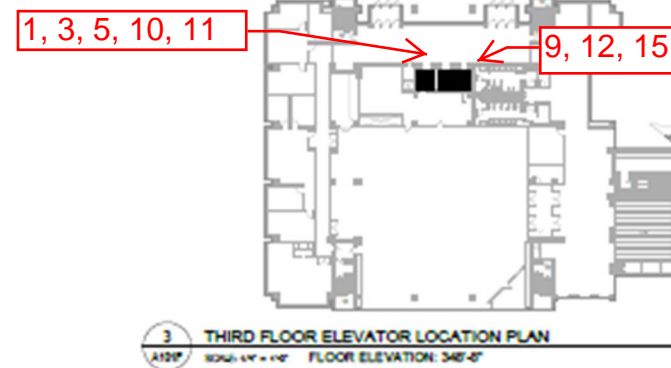
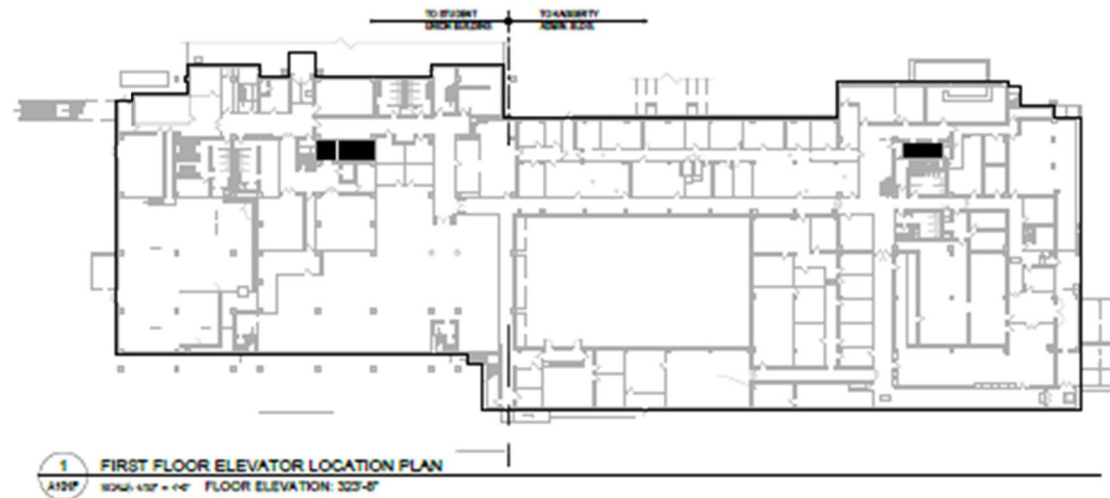
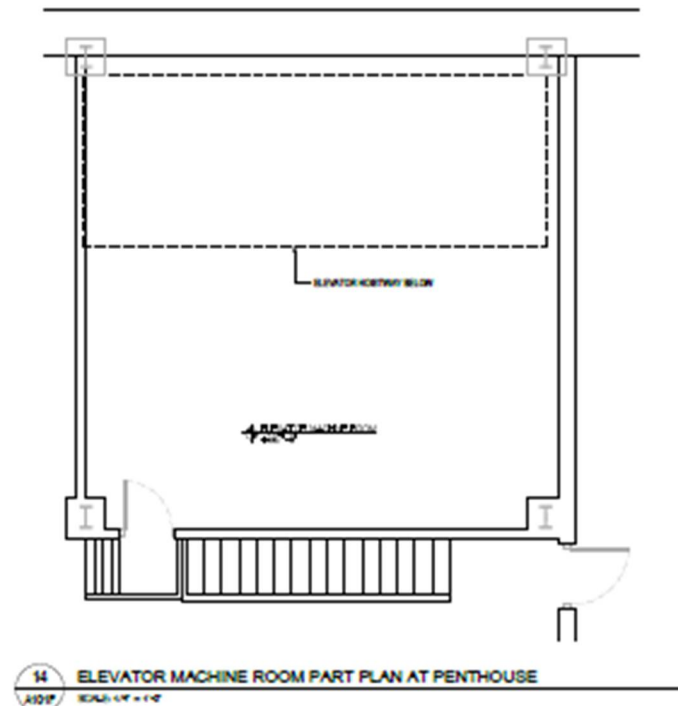
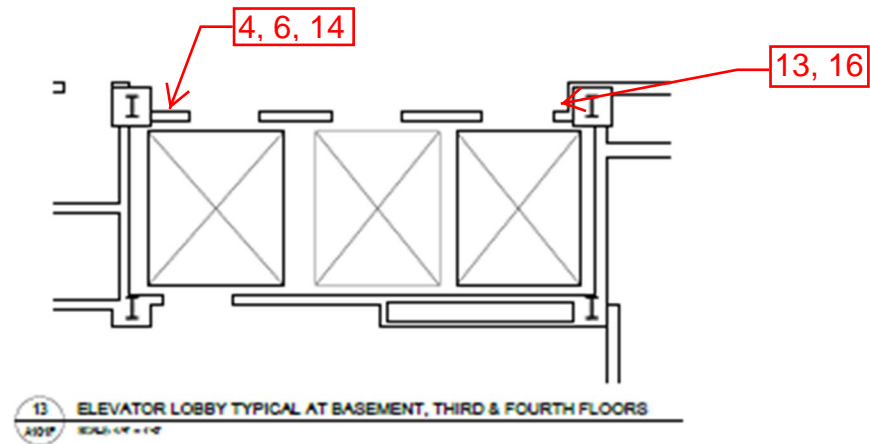
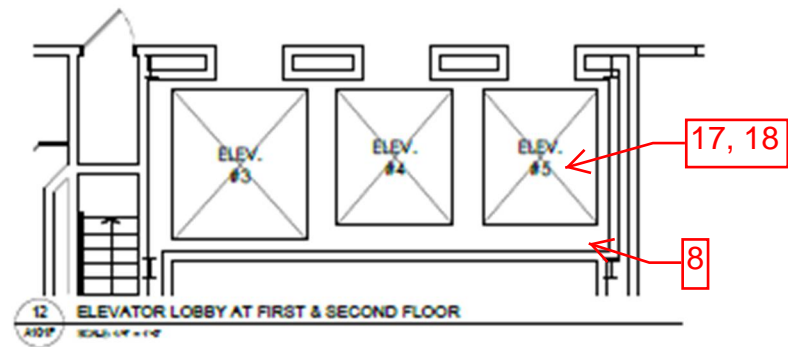
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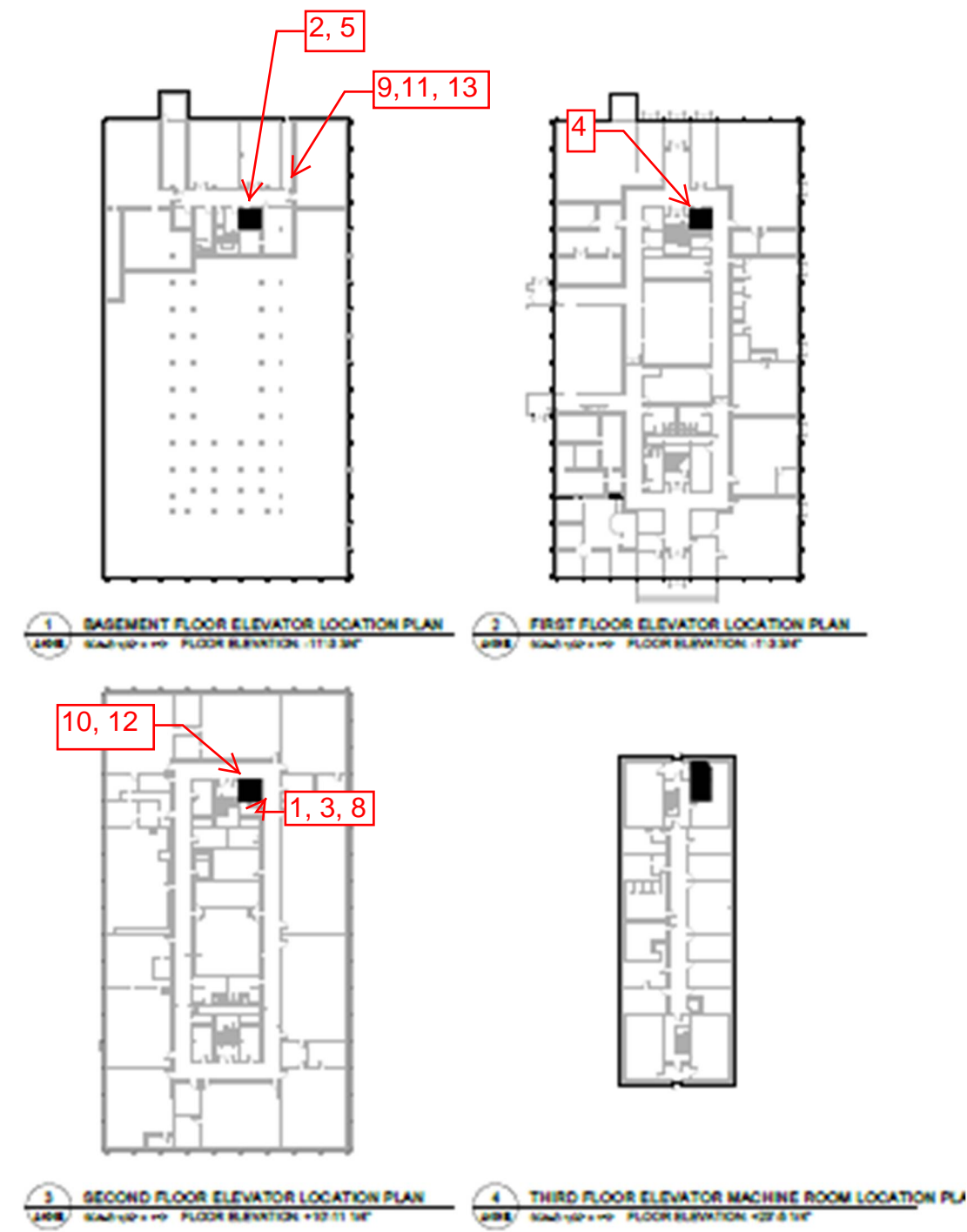
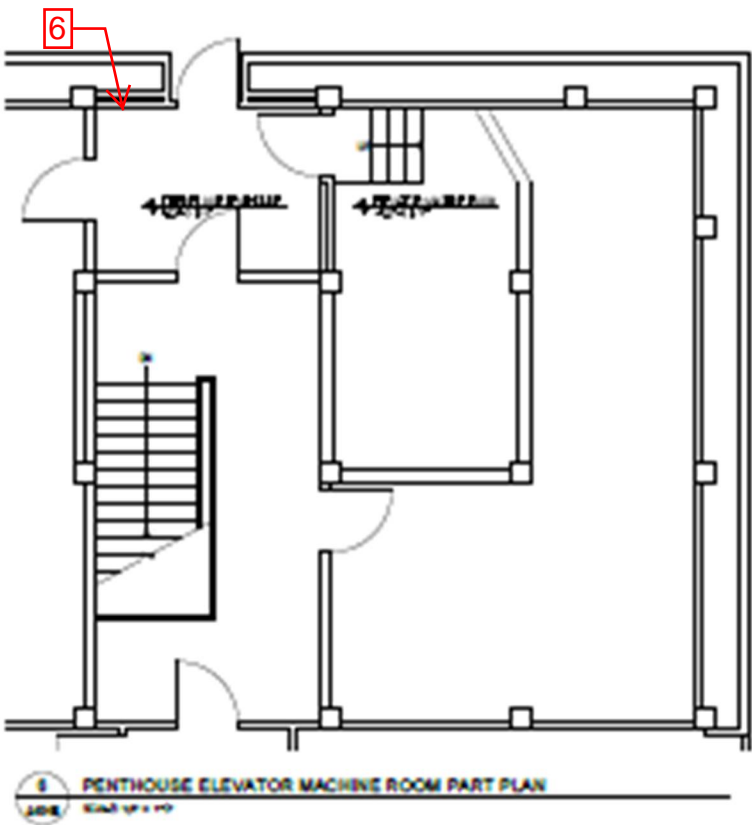
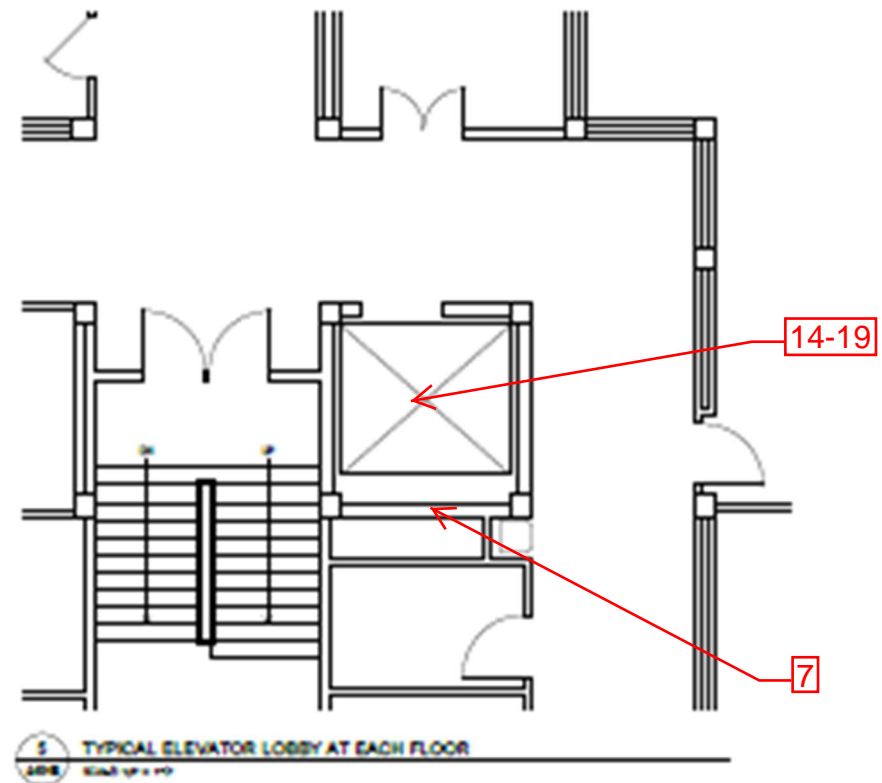
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Limited HazMat Survey

ADELAIDE PROJECT NO.:
MDS:21250.00-IN

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LNJ3

SUB
SL-02





CLIENT:
John O'Connor
MDSzerbaty Associates
Architecture
307 Seventh Avenue, 1501
New York, New York 10001

Project #SUCF081058

SURVEY LOCATION:
SUNY NewPaltz College -
6-Buildings, 11-Elevators
1 Hawk Drive
New Paltz, New York 12561

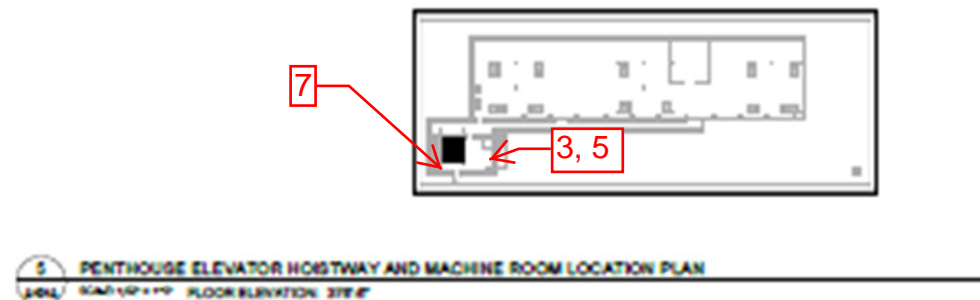
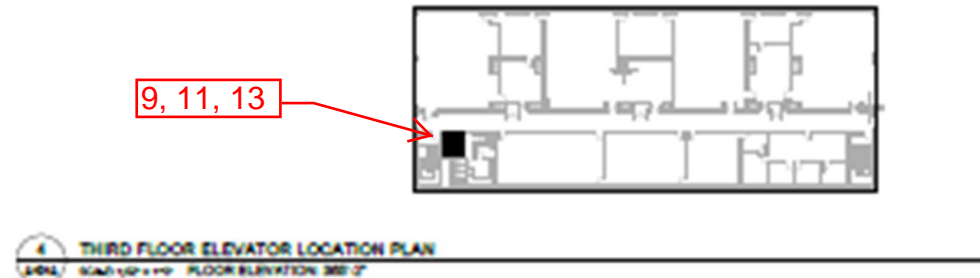
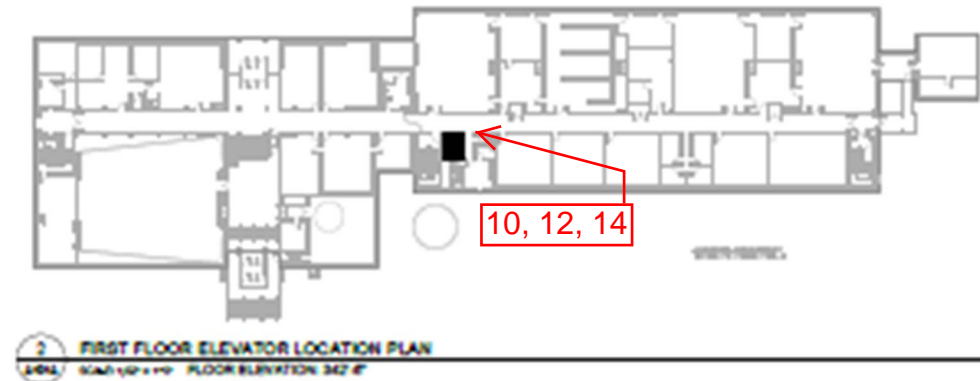
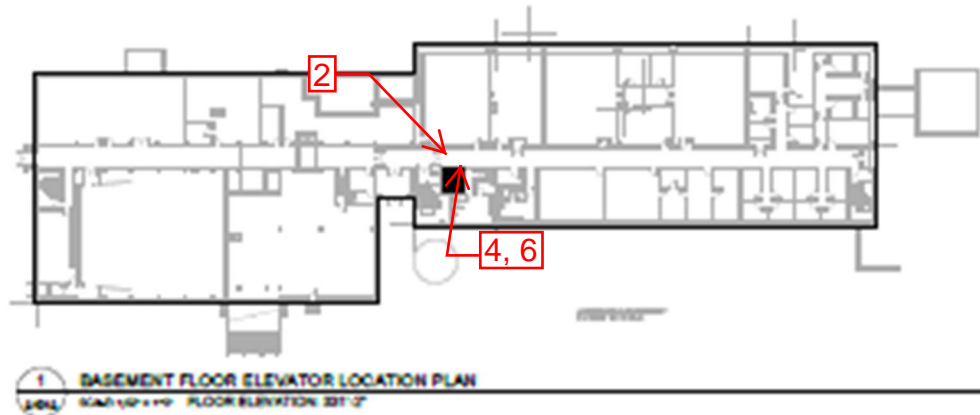
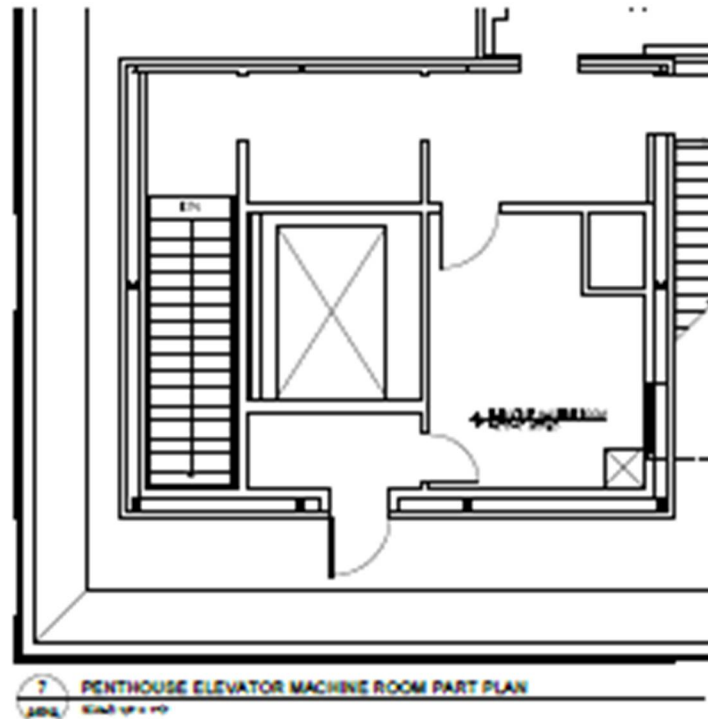
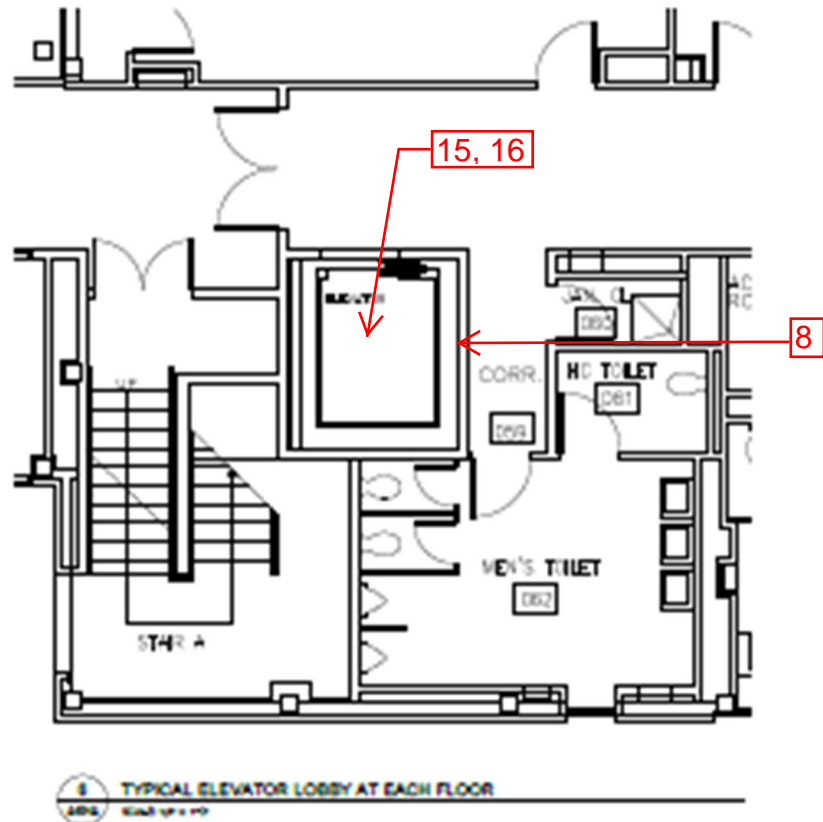
DATE: 09/22/2021

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Limited HazMat Survey

ADELAIDE PROJECT NO.:
MDS:21250.00-IN

DRAWING PREPARED BY:
LNJ3



CLIENT:
John O'Connor
MDSzerbaty Associates
Architecture
307 Seventh Avenue, 1501
New York, New York 10001

Project #SUCF081058

SURVEY LOCATION:
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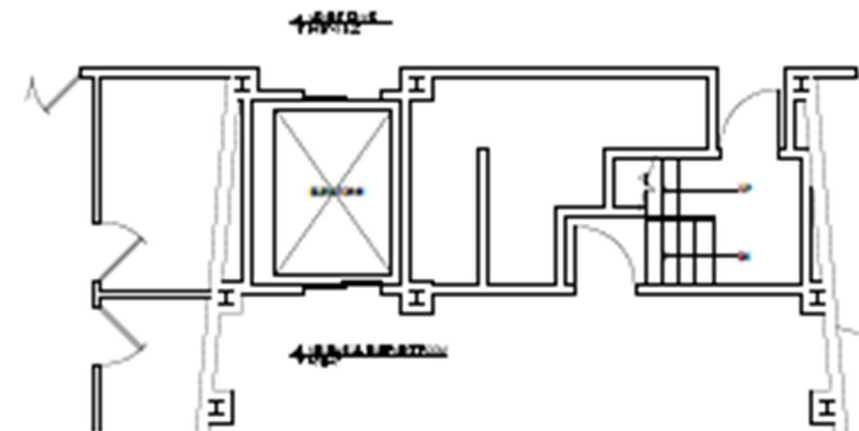
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Limited HazMat Survey

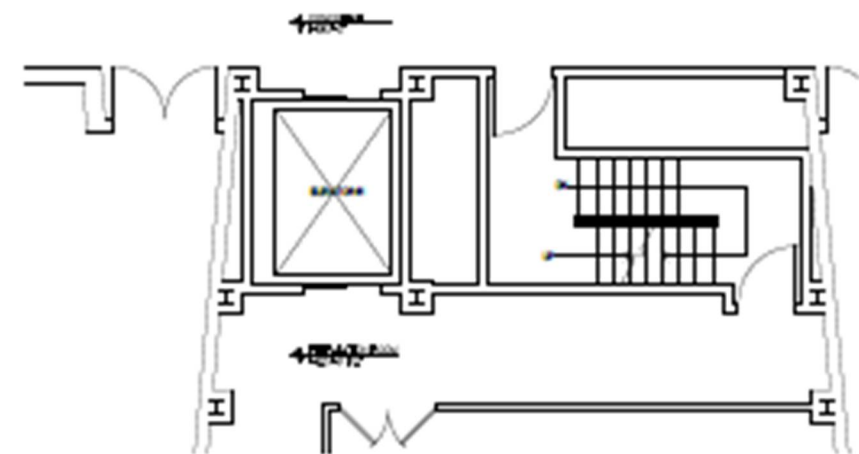
ADELAIDE PROJECT NO.:
MDS:21250.00-IN

DRAWING PREPARED BY:
LNJ3

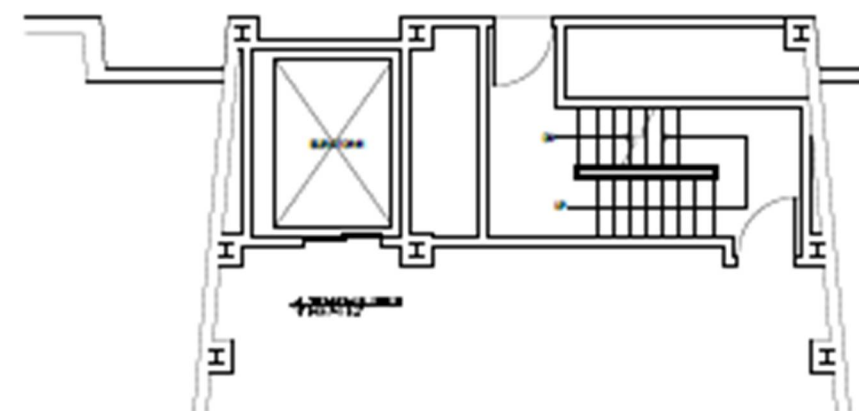
CSB
SL-04



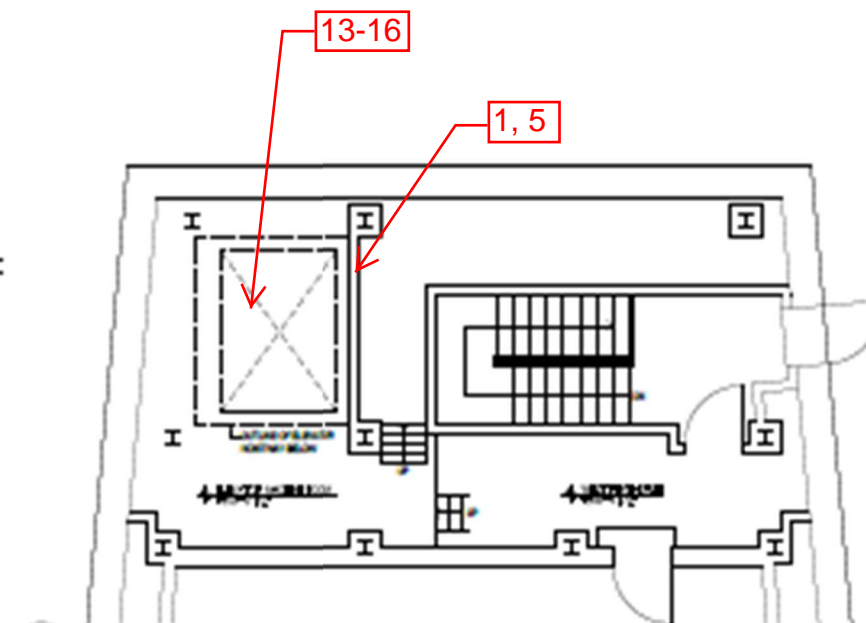
5 ELEVATOR LOBBY AT MECHANICAL ROOM AND GROUND FLOOR
1/8" = 1' - 0"



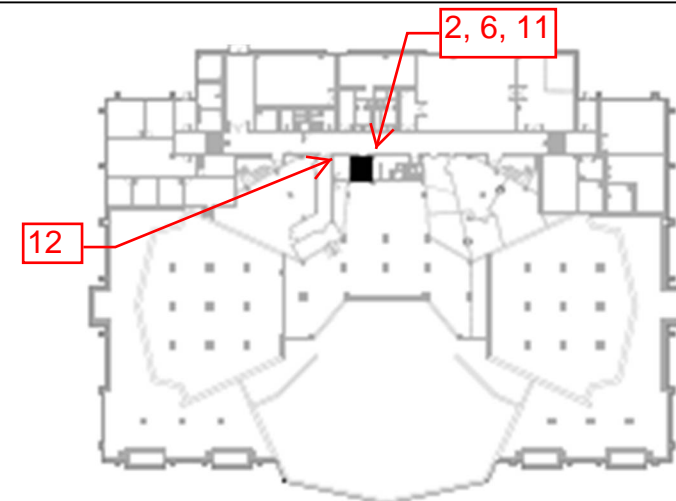
6 ELEVATOR LOBBY AT PREPARATION ROOM AND CONCOURSE
1/8" = 1' - 0"



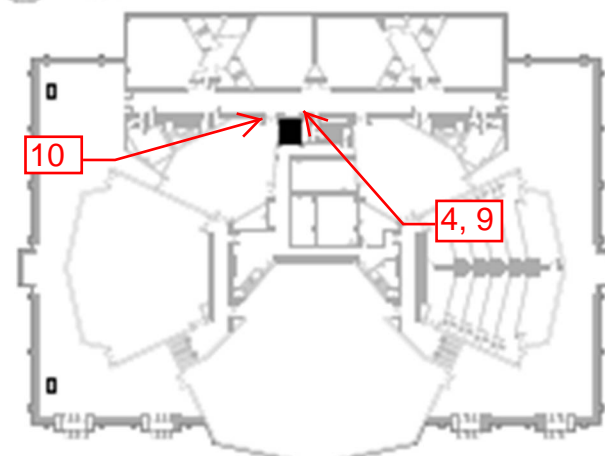
7 TYPICAL ELEVATOR LOBBY AT TECHNICIAN'S OFFICE
1/8" = 1' - 0"



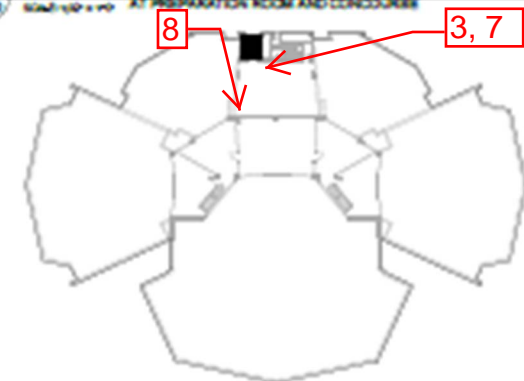
8 PLAN AT ELEVATOR MACHINE ROOM
1/8" = 1' - 0"



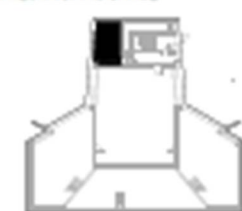
1 ELEVATOR LOCATION PLAN
1/8" = 1' - 0" AT MECHANICAL AND GROUND FLOOR



2 ELEVATOR LOCATION PLAN
1/8" = 1' - 0" AT PREPARATION ROOM AND CONCOURSE



3 ELEVATOR LOCATION PLAN
1/8" = 1' - 0" AT TECHNICIAN'S OFFICE



4 ELEVATOR MACHINE ROOM LOCATION PLAN
1/8" = 1' - 0"

CLIENT:
John O'Connor
MDSzerbaty Associates
Architecture
307 Seventh Avenue, 1501
New York, New York 10001

Project #SUCF081058

SURVEY LOCATION:
SUNY NewPaltz College -
6-Buildings, 11-Elevators
1 Hawk Drive
New Paltz, New York 12561

DATE: 09/22/2021

DRAWING VERSION: No. 1

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Limited HazMat Survey

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DRAWING PREPARED BY:
LNJ3

LHB
SL-05

CLIENT:
John O'Connor
MDSzerbaty Associates
Architecture
307 Seventh Avenue, 1501
New York, New York 10001

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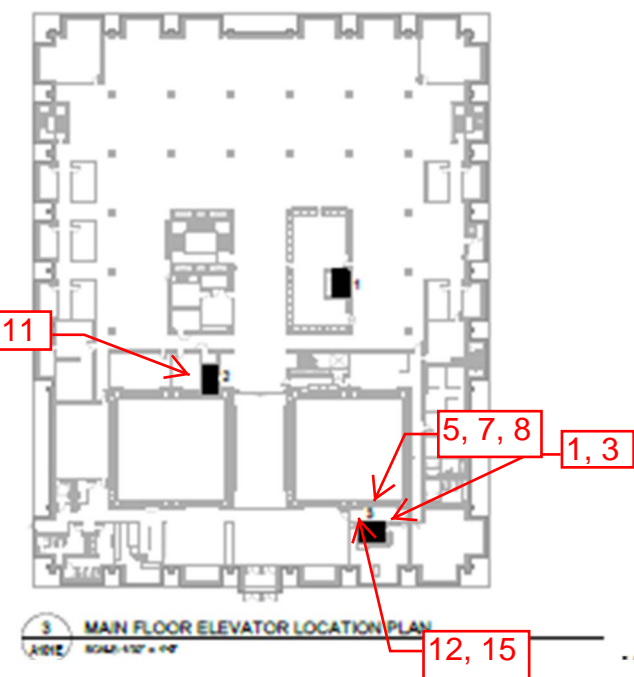
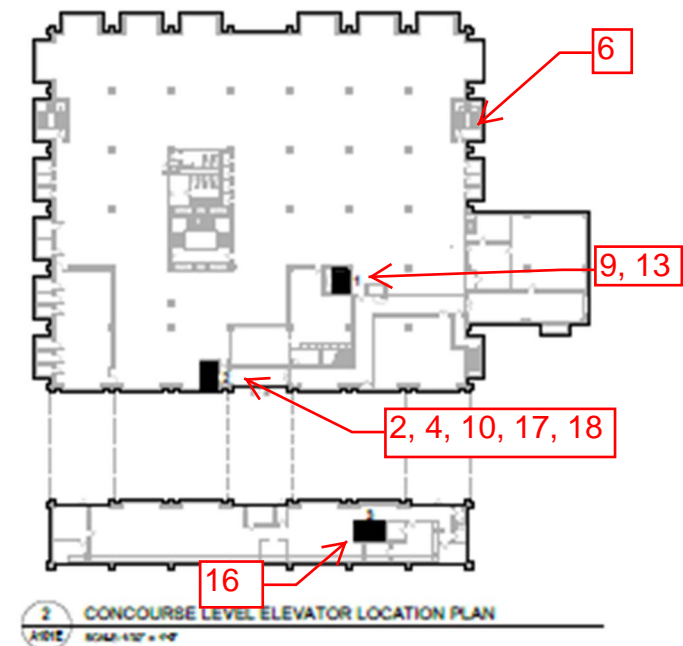
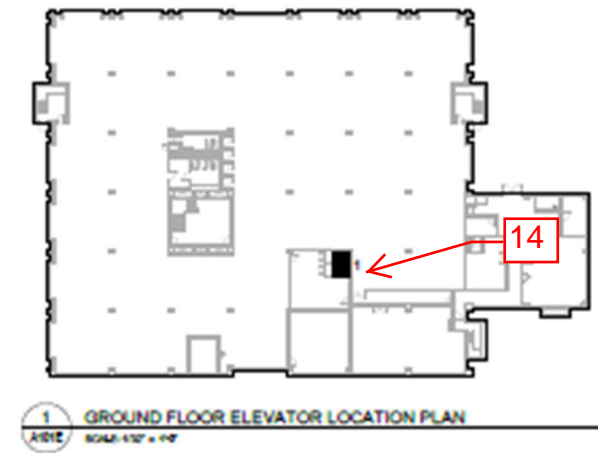
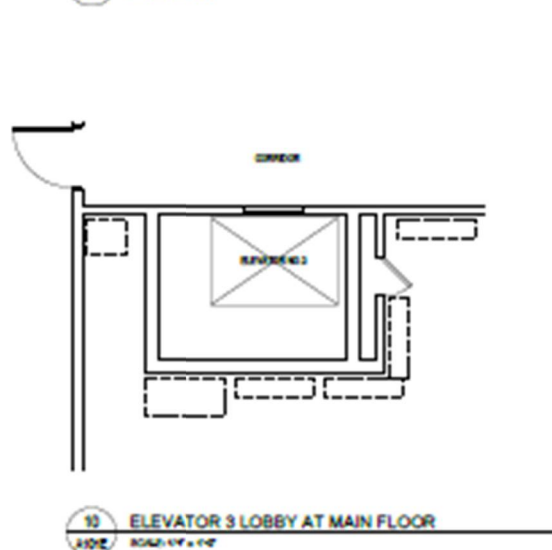
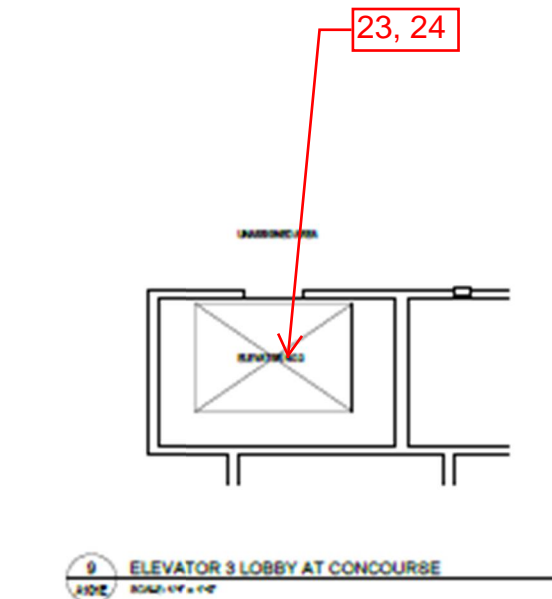
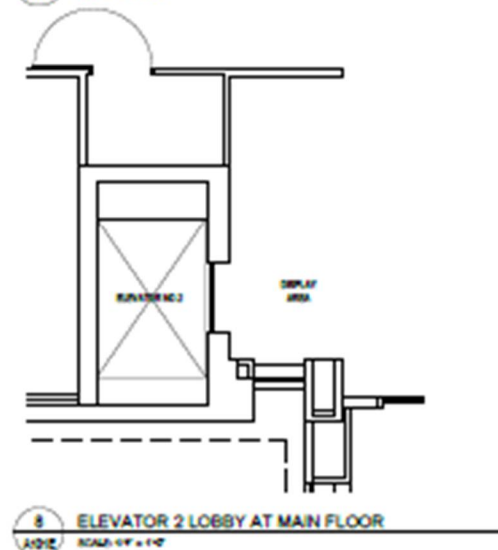
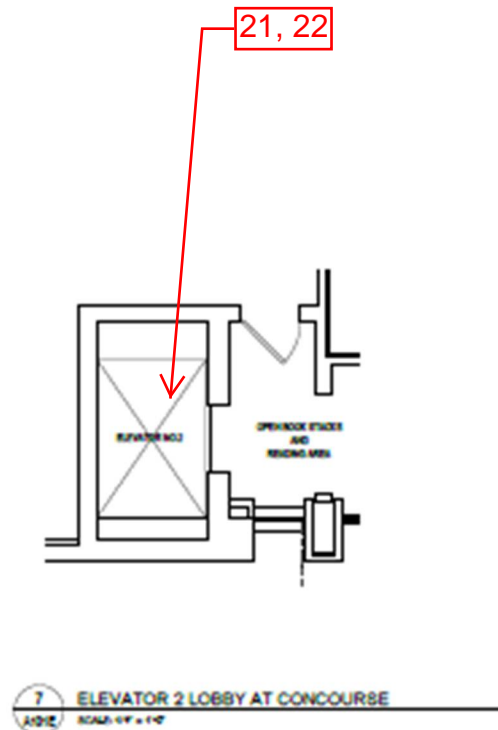
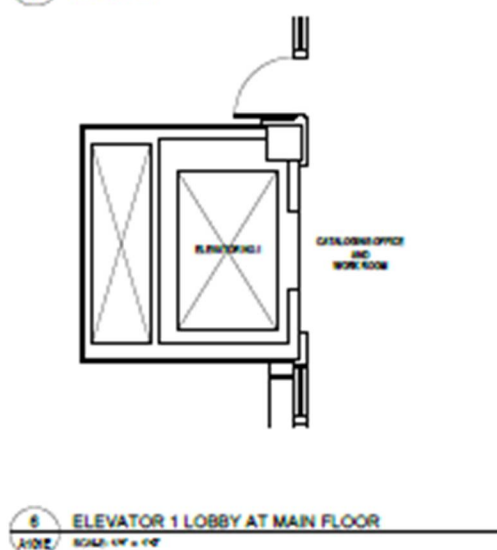
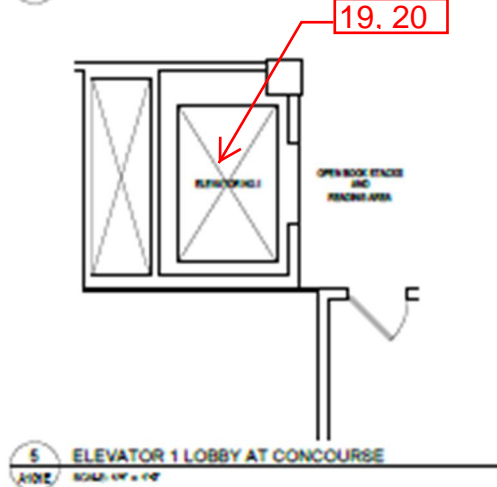
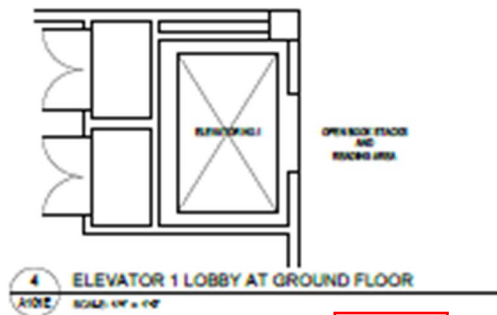
DRAWING VERSION: No. 1

ISSUED FOR:
Limited HazMat Survey

ADELAIDE PROJECT NO.:
MDS:21250.00-IN

DRAWING PREPARED BY:
LNJ3

STL
SL-06



APPENDIX C
ASBESTOS ANALYTICAL RESULTS

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

MDS:21250.00-IN; SUNY New Paltz; Haggerty Administration, 1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF 081058

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	0.183	16.3	21.8	61.9	NAD	NAD
Location: 6th Floor, Hallway O/S Elevator #1 & #2 - Suspended 2' x 2' / 2' x 4' Ceiling Tile								
02	2	1	0.206	16.0	18.2	65.8	NAD	NAD
Location: 2nd Floor, Hallway O/S Elevator #1 & #2 - Suspended 2' x 2' / 2' x 4' Ceiling Tile								
03	3	2	----	----	----	----	NAD	NA
Location: 5th Floor, Hallway O/S Elevator #1 & #2 Wall - Sheetrock								
04	4	2	----	----	----	----	NAD	NA
Location: 2nd Floor, Hallway O/S Elevator #1 & #2 Wall - Sheetrock								
05	5	3	----	----	----	----	Chrysotile 0.5	NA
Location: 5th Floor, Hallway O/S Elevator #1 & #2 On Sheetrock Wall - Joint Compound								
06	6	3	----	----	----	----	Chrysotile 0.3	NA
Location: 2nd Floor, Hallway O/S Elevator #1 & #2 On Sheetrock Wall - Joint Compound								
07	7	4	----	----	----	----	NAD	NA
Location: 1st Floor, Hallway O/S Elevator #1 & #2 Wall - Brick Mortar								
08	8	4	----	----	----	----	NAD	NA
Location: 1st Floor, Hallway O/S Elevator #1 & #2 Floor - Brick Mortar								
09	9	5	----	----	----	----	NAD	NA
Location: 9th Floor, MER Perimeter Wall CMU - Mortar								
10	10	5	----	----	----	----	NAD	NA
Location: Base Floor, Pit Perimeter Wall CMU - Mortar								
11L1	11	6	0.139	51.6	28.8	19.6	NAD	NAD
Location: 8th Floor, Hallway O/S Elevator #1 & #2, On Sheetrock Wall - Cove Base Molding								
11L2	11	7	0.266	51.2	8.6	40.2	NAD	NAD
Location: 8th Floor, Hallway O/S Elevator #1 & #2, On Sheetrock Wall - Cove Base Molding Adhesive								
12L1	12	6	0.187	51.6	5.1	43.3	NAD	NAD
Location: 4th Floor, Hallway O/S Elevator #1 & #2, On Sheetrock Wall - Cove Base Molding								
12L2	12	7	0.336	52.1	19.1	28.8	NAD	NAD
Location: 4th Floor, Hallway O/S Elevator #1 & #2, On Sheetrock Wall - Cove Base Molding Adhesive								
13L1	13	8	0.162	48.0	48.7	3.3	NAD	NAD
Location: Base Floor, Hallway O/S Elevator #1 & #2, On Sheetrock Wall - Cove Base Molding								
13L2	13	9	0.304	50.7	23.0	26.3	NAD	NAD
Location: Base Floor, Hallway O/S Elevator #1 & #2, On Sheetrock Wall - Cove Base Molding Adhesive								

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

MDS:21250.00-IN; SUNY New Paltz; Haggerty Administration, 1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF 081058

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
14L1	14	8	0.139	59.3	32.2	8.5	NAD	NAD
Location: Base Floor, Hallway O/S Elevator #1 & #2, On Sheetrock Wall - Cove Base Molding								
14L2	14	9	0.396	47.3	34.5	18.2	NAD	NAD
Location: Base Floor, Hallway O/S Elevator #1 & #2, On Sheetrock Wall - Cove Base Molding Adhesive								
15	15	10	----	----	----	----	NAD	NA
Location: 5th Floor, Hallway O/S Elevator #1 & #2, Floor - Concrete Slab								
16	16	10	----	----	----	----	NAD	NA
Location: Base Floor, Hallway O/S Elevator #1 & #2, Floor - Concrete Slab								
17L1	17	11	0.267	24.5	27.8	40.2	Chrysotile 7.6	NA
Location: 8th Floor, Hallway O/S Elevator #1 & #2, Floor On Concrete - 9" x 9" Floor Tile								
17L2	17	12	0.214	72.7	14.8	6.3	Chrysotile 6.3	NA
Location: 8th Floor, Hallway O/S Elevator #1 & #2, Floor On Concrete - 9" x 9" Floor Tile Mastic								
18L1	18	11	0.271	26.3	44.6	29.1	NA/PS	NA
Location: 4th Floor, Hallway O/S Elevator #1 & #2, Floor On Concrete - 9" x 9" Floor Tile								
18L2	18	12	0.134	75.6	11.4	12.9	NA/PS	NA
Location: 4th Floor, Hallway O/S Elevator #1 & #2, Floor On Concrete - 9" x 9" Floor Tile Mastic								
19L1	19	13	0.250	15.4	80.3	4.2	NAD	NAD
Location: Base Floor, Hallway O/S Elevator #1 & #2, Floor, On Concrete - 9" x 9" Floor Tile								
19L2	19	14	0.199	51.4	39.6	9.0	NAD	NAD
Location: Base Floor, Hallway O/S Elevator #1 & #2, Floor, On Concrete - 9" x 9" Floor Tile Mastic								
20L1	20	13	0.235	14.8	82.5	2.6	NAD	NAD
Location: Base Floor, Hallway O/S Elevator #1 & #2, Floor, On Concrete - 9" x 9" Floor Tile								
20L2	20	14	0.179	64.0	29.2	6.8	NAD	NAD
Location: Base Floor, Hallway O/S Elevator #1 & #2, Floor, On Concrete - 9" x 9" Floor Tile Mastic								
21	21	15	0.206	71.4	5.3	23.3	NAD	NAD
Location: E Floor, Elevator Cab, Floor, On Wood - Carpet Mastic								
22	22	15	0.384	84.4	4.6	11.0	NAD	NAD
Location: E Floor, Elevator Cab, Floor, On Wood - Carpet Mastic								

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

MDS:21250.00-IN; SUNY New Paltz; Haggerty Administration, 1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF 081058

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
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Analyzed by: Gabriella Morozov

Date: 9/11/2021



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 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 09/10/21 **AmeriSci Job #** 221091862
Date Examined 09/11/21 **P.O. #**
ELAP # 11480 **Page** 1 of 6
RE: MDS:21250.00-IN; SUNY New Paltz; Haggerty Administration,
1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUFC
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
1	221091862-01	No	NAD
1	Location: 6th Floor, Hallway O/S Elevator #1 & #2 - Suspended 2' x 2' / 2' x 4' Ceiling Tile		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 61.9%			
2	221091862-02	No	NAD
1	Location: 2nd Floor, Hallway O/S Elevator #1 & #2 - Suspended 2' x 2' / 2' x 4' Ceiling Tile		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 65.8%			
3	221091862-03	No	NAD
2	Location: 5th Floor, Hallway O/S Elevator #1 & #2 Wall - Sheetrock		(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose 40%, Fibrous glass Trace, Non-fibrous 60%			
4	221091862-04	No	NAD
2	Location: 2nd Floor, Hallway O/S Elevator #1 & #2 Wall - Sheetrock		(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose 10%, Fibrous glass 2%, Non-fibrous 88%			
5	221091862-05	Yes	0.5%
3	Location: 5th Floor, Hallway O/S Elevator #1 & #2 On Sheetrock Wall - Joint Compound		(ELAP 400 PC) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types: Chrysotile 0.5 %			
Other Material: Non-fibrous 99.5%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS:21250.00-IN; SUNY New Paltz; Haggerty Administration,
1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
6 3	221091862-06 Location: 2nd Floor, Hallway O/S Elevator #1 & #2 On Sheetrock Wall - Joint Compound	Yes	0.3% (ELAP 400 PC) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Chrysotile 0.3 % Other Material: Non-fibrous 99.7%			
7 4	221091862-07 Location: 1st Floor, Hallway O/S Elevator #1 & #2 Wall - Brick Mortar	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
8 4	221091862-08 Location: 1st Floor, Hallway O/S Elevator #1 & #2 Floor - Brick Mortar	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
9 5	221091862-09 Location: 9th Floor, MER Perimeter Wall CMU - Mortar	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
10 5	221091862-10 Location: Base Floor, Pit Perimeter Wall CMU - Mortar	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
11 6	221091862-11L1 Location: 8th Floor, Hallway O/S Elevator #1 & #2, On Sheetrock Wall - Cove Base Molding	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 19.6%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS:21250.00-IN; SUNY New Paltz; Haggerty Administration,
1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
11 7	221091862-11L2 Location: 8th Floor, Hallway O/S Elevator #1 & #2, On Sheetrock Wall - Cove Base Molding Adhesive	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 40.2%			
12 6	221091862-12L1 Location: 4th Floor, Hallway O/S Elevator #1 & #2, On Sheetrock Wall - Cove Base Molding	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 43.3%			
12 7	221091862-12L2 Location: 4th Floor, Hallway O/S Elevator #1 & #2, On Sheetrock Wall - Cove Base Molding Adhesive	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 28.8%			
13 8	221091862-13L1 Location: Base Floor, Hallway O/S Elevator #1 & #2, On Sheetrock Wall - Cove Base Molding	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 3.3%			
13 9	221091862-13L2 Location: Base Floor, Hallway O/S Elevator #1 & #2, On Sheetrock Wall - Cove Base Molding Adhesive	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 26.3%			
14 8	221091862-14L1 Location: Base Floor, Hallway O/S Elevator #1 & #2, On Sheetrock Wall - Cove Base Molding	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 8.5%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS:21250.00-IN; SUNY New Paltz; Haggerty Administration,
1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
14 9	221091862-14L2 Location: Base Floor, Hallway O/S Elevator #1 & #2, On Sheetrock Wall - Cove Base Molding Adhesive	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
15 10	221091862-15 Location: 5th Floor, Hallway O/S Elevator #1 & #2, Floor - Concrete Slab	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
16 10	221091862-16 Location: Base Floor, Hallway O/S Elevator #1 & #2, Floor - Concrete Slab	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
17 11	221091862-17L1 Location: 8th Floor, Hallway O/S Elevator #1 & #2, Floor On Concrete - 9" x 9" Floor Tile	Yes	7.6% (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Chrysotile 7.6 % Other Material: Non-fibrous 40.2%			
17 12	221091862-17L2 Location: 8th Floor, Hallway O/S Elevator #1 & #2, Floor On Concrete - 9" x 9" Floor Tile Mastic	Yes	6.3% (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Chrysotile 6.3 % Other Material: Non-fibrous 6.2%			
18 11	221091862-18L1 Location: 4th Floor, Hallway O/S Elevator #1 & #2, Floor On Concrete - 9" x 9" Floor Tile		NA/PS
Analyst Description: Bulk Material Asbestos Types: Other Material:			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS:21250.00-IN; SUNY New Paltz; Haggerty Administration,
1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
18	221091862-18L2		NA/PS
12	Location: 4th Floor, Hallway O/S Elevator #1 & #2, Floor On Concrete - 9" x 9" Floor Tile Mastic		
Analyst Description: Bulk Material			
Asbestos Types:			
Other Material:			
19	221091862-19L1	No	NAD
13	Location: Base Floor, Hallway O/S Elevator #1 & #2, Floor, On Concrete - 9" x 9" Floor Tile		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Off-White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 4.2%			
19	221091862-19L2	No	NAD
14	Location: Base Floor, Hallway O/S Elevator #1 & #2, Floor, On Concrete - 9" x 9" Floor Tile Mastic		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 9%			
20	221091862-20L1	No	NAD
13	Location: Base Floor, Hallway O/S Elevator #1 & #2, Floor, On Concrete - 9" x 9" Floor Tile		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Off-White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 2.6%			
20	221091862-20L2	No	NAD
14	Location: Base Floor, Hallway O/S Elevator #1 & #2, Floor, On Concrete - 9" x 9" Floor Tile Mastic		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 6.8%			
21	221091862-21	No	NAD
15	Location: E Floor, Elevator Cab, Floor, On Wood - Carpet Mastic		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 23.3%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS:21250.00-IN; SUNY New Paltz; Haggerty Administration,
1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
22	221091862-22	No	NAD
15	Location: E Floor, Elevator Cab, Floor, On Wood - Carpet Mastic		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 11%			

Reporting Notes:

Analyzed by: John P. Koubiadis
Date: 9/11/2021



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 Olympus, Model BH-2 Pol Scope, Microscope, Serial #: 223705, 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

№ 221091862

SUM New Paltz

Site Address: Haggerty Administration			Date: 9-8-2021	Inspector(s) Louis N. Johnson III		
1 Hawk Drive			Client Project #: SUCF 081058	0800 - 1630		
New Paltz, NY 12561			Project #: MDS: 21250.00 - IN			
Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable NonFriable	Condition g, d, sd
1	1	6th	CE Hallway 01S Elevator #1+#2 suspended 2 1/2' x 2' ceiling tile		F	G
2	1	2nd	" "		F	"
3	2	5th	Hallway 01S Elevator #1+#2 wall - sheetrock		F	"
4	2	2nd	" "		"	"
5	3	5th	Hallway 01S Elevator #1+#2 on sheetrock wall - Joint compound		"	"
6	3	2nd	" "		"	"
7	4	1st	Hallway 01S Elevator #1+#2 wall Brk Mortar		"	"
8	4	"	" " Floor " "		"	"
9	5	9th Base	MER perimeter wall CMU - mortar		"	"
10	5	Base	Pit perimeter wall CMU - mortar		"	"
11	6/7	8th	Hallway 01S Elevators #1+#2, on sheetrock wall - Cove Base molding + Adhesive		NF	"
12	6/7	4th	" "		"	"
<div style="display: flex; justify-content: space-between;"> <div> <p>Special Instructions/ Turnaround Time:</p> <p>Stop at 1st Positive per Homogenous Area</p> <p>E-Mail Results to AdelaideLabResults@adelaidellc.com & ljohnson@adelaidellc.com</p> </div> <div style="text-align: center;"> <p>2 YHK TAT</p> </div> <div> <p>Relinquished by: </p> <p>Received by: Alexander Vorcu Vorcu 9-10-21 1530</p> <p>Relinquished by:</p> <p>Received by:</p> </div> </div>						

Adelaide Environmental Health Associates, Inc

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

№ 221091862

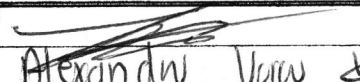
SUNY New Paltz

Site Address: <u>Haggerty Administration Bldg</u>			Date: <u>9-8-2021</u>	Inspector(s) <u>Louis N. Johnson III</u>		
<u>1 Hawk Drive</u>			Client Project #: <u>SUCF 081058</u>	<u>0800-1630</u>		
<u>New Paltz, NY 12561</u>			Project #: <u>MDSI21250.00-IN</u>	Quantity (In Feet)	Frangible NonFrangible	Condition g, d, sd
Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Frangible NonFrangible	Condition g, d, sd
13	819	Box	Hallway O/S Elevators #1 + #2, on sheet rock wall - Cove Base mudding + Adhesive		MF	G
14	819	11	11		11	11
15	10	5th	Hallway O/S Elevators #1 + #2, Floor - concrete slab		F	G
16	10	Base 11	11		11	11
17	11112	8th	Hallway, O/S Elevators #1 + #2 Floor on concrete 9'x9" Floor tile + mastic (Base)		MF	11
18	11112	4th	11		11	11
19	13114	Box	Hallway O/S Elevators #1 + #2, Floor on concrete, 12'x12" Floor tile + mastic (great)		11	11
20	13114	11	11		11	11
21	15	E	Elevator cab, Floor, on wood - carpet mastic		11	11
22	15	E	11		11	11

Special Instructions/ Turnaround Time:

Stop at 1st Positive per Homogenous Area

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

Relinquished by: 

Received by: Alexander W. Vane 9-10-21 1530

Relinquished by:

Received by:

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

MDS:21250.00-IN; SUNY New Paltz; Student Union Bldg, 1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF 081058

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	0.206	15.7	46.4	37.9	NAD	NAD
Location: 3rd Floor, Hallway O/S Elevators (3-5) - Suspended 2' x 4' Ceiling Tile								
02	2	1	0.364	17.1	50.5	32.3	NAD	NAD
Location: 2nd Floor, Hallway O/S Elevators (3-5) - Suspended 2' x 4' Ceiling Tile								
03	3	2	----	----	----	----	NAD	NA
Location: 3rd Floor, Hallway O/S Elevators (3-5) Wall - Sheetrock								
04	4	2	----	----	----	----	NAD	NA
Location: Base Floor, Hallway O/S Elevators (3-5) Wall - Sheetrock								
05	5	3	----	----	----	----	NAD	NA
Location: 3rd Floor, Hallway O/S Elevators (3-5) On Sheetrock Wall - Joint Compound								
06	6	3	----	----	----	----	NAD	NA
Location: Base Floor, Hallway O/S Elevators (3-5) On Sheetrock Wall - Joint Compound								
07	7	4	----	----	----	----	NAD	NA
Location: 4th Floor, MER Room Perimeter Wall - CMU Mortar								
08	8	4	----	----	----	----	NAD	NA
Location: Shaft Floor, Pit Perimeter Wall - CMU Mortar								
09L1	9	5	0.249	51.3	17.2	31.5	NAD	NAD
Location: 3rd Floor, Hallway O/S Elevators (3-5) On Sheetrock Walls - Cove Base Molding								
09L2	9	6	0.147	52.3	10.1	37.6	NAD	NAD
Location: 3rd Floor, Hallway O/S Elevators (3-5) On Sheetrock Walls - Cove Base Molding Adhesive								
10L1	10	5	0.140	51.8	5.7	42.5	NAD	NAD
Location: 3rd Floor, Hallway O/S Elevators (3-5) On Sheetrock Walls - Cove Base Molding								
10L2	10	6	0.099	51.2	24.5	24.4	NAD	NAD
Location: 3rd Floor, Hallway O/S Elevators (3-5) On Sheetrock Walls - Cove Base Molding Adhesive								
11L1	11	7	0.232	22.0	29.4	42.7	Chrysotile 5.9	NA
Location: 3rd Floor, Hallway O/S Elevators (3-5) On Concrete Floor - 9" x 9" Floor Tile								
11L2	11	8	0.238	61.7	10.3	18.7	Chrysotile 9.3	NA
Location: 3rd Floor, Hallway O/S Elevators (3-5) On Concrete Floor - 9" x 9" Floor Tile Mastic								
12L1	12	7	0.290	22.8	29.3	48.0	NA/PS	NA
Location: 3rd Floor, Hallway O/S Elevators (3-5) On Concrete Floor - 9" x 9" Floor Tile								
12L2	12	8	0.189	73.0	10.8	16.3	NA/PS	NA
Location: 3rd Floor, Hallway O/S Elevators (3-5) On Concrete Floor - 9" x 9" Floor Tile Mastic								

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

MDS:21250.00-IN; SUNY New Paltz; Student Union Bldg, 1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF 081058

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
13L1	13	9	0.312	12.0	75.4	12.6	NAD	NAD
Location: Base Floor, Hallway O/S Elevators (3-5) On Concrete Floor - 12' x 12" Floor Tiles								
13L2	13	10	0.191	27.6	48.5	23.9	NAD	NAD
Location: Base Floor, Hallway O/S Elevators (3-5) On Concrete Floor - 12' x 12" Floor Tiles Mastic								
14L1	14	9	0.403	40.4	45.2	14.4	NAD	NAD
Location: Base Floor, Hallway O/S Elevators (3-5) On Concrete Floor - 12' x 12" Floor Tiles								
14L2	14	10	0.388	58.6	25.9	15.5	NAD	NAD
Location: Base Floor, Hallway O/S Elevators (3-5) On Concrete Floor - 12' x 12" Floor Tiles Mastic								
15	15	11	----	----	----	----	NAD	NA
Location: 3rd Floor, Hallway O/S Elevators (3-5) Floor - Concrete Slab								
16	16	11	----	----	----	----	NAD	NA
Location: Base Floor, Hallway O/S Elevators (3-5) Floor - Concrete Slab								
17L1	17	12	0.272	13.0	80.8	6.3	NAD	NAD
Location: E Floor, Elevator #5 Cab Floor On Wood Bottom Layer Under Rubber Matting (Beige) - 12' x 12" Floor Tiles								
17L2	17	13	0.363	81.8	3.6	14.6	NAD	NAD
Location: E Floor, Elevator #5 Cab Floor On Wood Bottom Layer Under Rubber Matting (Beige) - 12' x 12" Floor Tiles Mastic								
18L1	18	12	0.259	11.8	83.3	4.9	NAD	NAD
Location: E Floor, Elevator #5 Cab Floor On Wood Bottom Layer Under Rubber Matting (Beige) - 12' x 12" Floor Tiles								
18L2	18	13	0.272	73.7	4.3	22.0	NAD	NAD
Location: E Floor, Elevator #5 Cab Floor On Wood Bottom Layer Under Rubber Matting (Beige) - 12' x 12" Floor Tiles Mastic								

Analyzed by: Gabriella Morozov



Reviewed by: Gabriella Morozov



Date: 9/11/2021

**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 09/10/21 **AmeriSci Job #** 221091865
Date Examined 09/11/21 **P.O. #**
ELAP # 11480 **Page** 1 of 5
RE: MDS:21250.00-IN; SUNY New Paltz; Student Union Bldg, 1
Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF 081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
1 1	221091865-01 Location: 3rd Floor, Hallway O/S Elevators (3-5) - Suspended 2' x 4' Ceiling Tile	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 37.9%			
2 1	221091865-02 Location: 2nd Floor, Hallway O/S Elevators (3-5) - Suspended 2' x 4' Ceiling Tile	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 32.3%			
3 2	221091865-03 Location: 3rd Floor, Hallway O/S Elevators (3-5) Wall - Sheetrock	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Fibrous, Bulk Material Asbestos Types: Other Material: Cellulose 25%, Fibrous glass Trace, Non-fibrous 75%			
4 2	221091865-04 Location: Base Floor, Hallway O/S Elevators (3-5) Wall - Sheetrock	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Fibrous, Bulk Material Asbestos Types: Other Material: Cellulose 35%, Non-fibrous 65%			
5 3	221091865-05 Location: 3rd Floor, Hallway O/S Elevators (3-5) On Sheetrock Wall - Joint Compound	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS:21250.00-IN; SUNY New Paltz; Student Union Bldg, 1
Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
6 3	221091865-06	No	NAD
Location: Base Floor, Hallway O/S Elevators (3-5) On Sheetrock Wall - Joint Compound			(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100%			
7 4	221091865-07	No	NAD
Location: 4th Floor, MER Room Perimeter Wall - CMU Mortar			(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100%			
8 4	221091865-08	No	NAD
Location: Shaft Floor, Pit Perimeter Wall - CMU Mortar			(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100%			
9 5	221091865-09L1	No	NAD
Location: 3rd Floor, Hallway O/S Elevators (3-5) On Sheetrock Walls - Cove Base Molding			(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 31.5%			
9 6	221091865-09L2	No	NAD
Location: 3rd Floor, Hallway O/S Elevators (3-5) On Sheetrock Walls - Cove Base Molding Adhesive			(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 37.6%			
10 5	221091865-10L1	No	NAD
Location: 3rd Floor, Hallway O/S Elevators (3-5) On Sheetrock Walls - Cove Base Molding			(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 42.5%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS:21250.00-IN; SUNY New Paltz; Student Union Bldg, 1
Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
10 6	221091865-10L2	No	NAD
Location: 3rd Floor, Hallway O/S Elevators (3-5) On Sheetrock Walls - Cove Base Molding Adhesive			(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 24.4%			
11 7	221091865-11L1	Yes	5.9%
Location: 3rd Floor, Hallway O/S Elevators (3-5) On Concrete Floor - 9" x 9" Floor Tile			(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types: Chrysotile 5.9 %			
Other Material: Non-fibrous 42.7%			
11 8	221091865-11L2	Yes	9.3%
Location: 3rd Floor, Hallway O/S Elevators (3-5) On Concrete Floor - 9" x 9" Floor Tile Mastic			(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types: Chrysotile 9.3 %			
Other Material: Non-fibrous 18.7%			
12 7	221091865-12L1		NA/PS
Location: 3rd Floor, Hallway O/S Elevators (3-5) On Concrete Floor - 9" x 9" Floor Tile			
Analyst Description: Bulk Material			
Asbestos Types:			
Other Material:			
12 8	221091865-12L2		NA/PS
Location: 3rd Floor, Hallway O/S Elevators (3-5) On Concrete Floor - 9" x 9" Floor Tile Mastic			
Analyst Description: Bulk Material			
Asbestos Types:			
Other Material:			
13 9	221091865-13L1	No	NAD
Location: Base Floor, Hallway O/S Elevators (3-5) On Concrete Floor - 12' x 12" Floor Tiles			(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Off-White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 12.6%			

PLM Bulk Asbestos Report

MDS:21250.00-IN; SUNY New Paltz; Student Union Bldg, 1
Hawk Drive, New Paltz, NY 12561, Client Project #: SUFC
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
13	221091865-13L2	No	NAD
10	Location: Base Floor, Hallway O/S Elevators (3-5) On Concrete Floor - 12' x 12" Floor Tiles Mastic		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 23.9%			
14	221091865-14L1	No	NAD
9	Location: Base Floor, Hallway O/S Elevators (3-5) On Concrete Floor - 12' x 12" Floor Tiles		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Off-White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 14.4%			
14	221091865-14L2	No	NAD
10	Location: Base Floor, Hallway O/S Elevators (3-5) On Concrete Floor - 12' x 12" Floor Tiles Mastic		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 15.5%			
15	221091865-15	No	NAD
11	Location: 3rd Floor, Hallway O/S Elevators (3-5) Floor - Concrete Slab		(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100%			
16	221091865-16	No	NAD
11	Location: Base Floor, Hallway O/S Elevators (3-5) Floor - Concrete Slab		(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100%			
17	221091865-17L1	No	NAD
12	Location: E Floor, Elevator #5 Cab Floor On Wood Bottom Layer Under Rubber Matting (Beige) - 12' x 12" Floor Tiles		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Off-White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 6.3%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS:21250.00-IN; SUNY New Paltz; Student Union Bldg, 1
Hawk Drive, New Paltz, NY 12561, Client Project #: SUFC
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
17	221091865-17L2	No	NAD
13	Location: E Floor, Elevator #5 Cab Floor On Wood Bottom Layer Under Rubber Matting (Beige) - 12' x 12" Floor Tiles Mastic		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Black/Tan, Heterogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 14.6%			
18	221091865-18L1	No	NAD
12	Location: E Floor, Elevator #5 Cab Floor On Wood Bottom Layer Under Rubber Matting (Beige) - 12' x 12" Floor Tiles		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Off-White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 4.9%			
18	221091865-18L2	No	NAD
13	Location: E Floor, Elevator #5 Cab Floor On Wood Bottom Layer Under Rubber Matting (Beige) - 12' x 12" Floor Tiles Mastic		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Black/Tan, Heterogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 22%			

Reporting Notes:

Analyzed by: John P. Koubiadis
Date: 9/11/2021



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 Olympus, Model BH-2 Pol Scope, Microscope, Serial #: 223705, 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

№ 221091865

SUNY New Paltz

Site Address:

Student Union Bldg
1 Hawk Drive
New Paltz, NY 12561

Date:

9-8-2021

Inspector(s)

Louis N. Johnson III

Client Project #:

SUCF081058

Project #:

MDS: 21250.00-IN

0800-1630

Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable Non-Friable	Condition g, d, sd
1	1	3rd	Hallway O/S Elevators (3-5) suspended 2'x4' ceiling tile		F	6
2	1	2nd	"		"	"
3	2	3rd	Hallway O/S Elevators (3-5) wall - sheetrock		"	"
4	2	Base	"		"	"
5	3	3rd	Hallway O/S Elevators (3-5) on sheetrock wall - Joint Compound		"	"
6	3	Base	"		"	"
7	4	4th	MER Room perimeter wall - cmu mortar		"	"
8	4	Shaft	Pit Perimeter wall - cmu mortar		"	"
9	5/6	3rd	Hallway O/S Elevators (3-5) on sheetrock walls - core base		"	"
10	5/6	"	"		"	"
11	7/8	"	Hallway O/S Elevators (3-5) on concrete floor - 9"x9" floor tile + mortar		"	"
12	7/8	"	"		"	"

Special Instructions/ Turnaround Time:

Stop at 1st Positive per Homogenous Area

24HR TAT

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

Relinquished by:

Received by:

Relinquished by:

Received by:

Alexander Vojta 9-10-21 1530

845-278-7750 - fax

№ 22 109 1865

SUNY New Paltz

Page 2 of 2

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

MDS:21250.00-IN; SUNY New Paltz; Smiley Arts Building, 1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF 081058

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	0.217	23.7	23.8	52.5	NAD	NAD
Location: 2nd Floor, Outside Elevator (Hallway) Suspended 2' x 2' / 2' x 4' - Ceiling Tile								
02	2	1	0.161	19.1	44.6	36.3	NAD	NAD
Location: Base Floor, Outside Elevator (Hallway) Suspended 2' x 2' / 2' x 4' - Ceiling Tile								
03L1	3	2	----	----	----	----	NAD	NA
Location: 2nd Floor, Hallway O/S Elevator #9, Wall Both Layers - Plaster - Skim Coat								
03L2	3	3	----	----	----	----	NAD	NA
Location: 2nd Floor, Hallway O/S Elevator #9, Wall Both Layers - Plaster - Base Coat								
04L1	4	2	----	----	----	----	NAD	NA
Location: 1st Floor, Hallway O/S Elevator #9, Wall Both Layers - Plaster - Skim Coat								
04L2	4	3	----	----	----	----	NAD	NA
Location: 1st Floor, Hallway O/S Elevator #9, Wall Both Layers - Plaster - Base Coat								
05L1	5	2	----	----	----	----	NAD	NA
Location: Base Floor, Hallway O/S Elevator #9, Wall Both Layers - Plaster - Skim Coat								
05L2	5	3	----	----	----	----	NAD	NA
Location: Base Floor, Hallway O/S Elevator #9, Wall Both Layers - Plaster - Base Coat								
06	6	4	----	----	----	----	NAD	NA
Location: 4th Floor, MER Perimeter Wall CMU - Mortar								
07	7	4	----	----	----	----	NAD	NA
Location: Shaft Floor, Pit Perimeter Wall CMU - Mortar								
08L1	8	5	0.202	48.8	47.3	3.9	NAD	NAD
Location: 2nd Floor, Hallway O/S Elevator #9 On Plaster Wall - Cove Base Molding								
08L2	8	6	0.358	64.9	13.7	21.4	NAD	NAD
Location: 2nd Floor, Hallway O/S Elevator #9 On Plaster Wall - Cove Base Molding Adhesive								
09L1	9	5	0.198	45.5	51.4	3.0	NAD	NAD
Location: Base Floor, Hallway O/S Elevator #9 On Plaster Wall - Cove Base Molding								
09L2	9	6	0.315	3.6	70.8	25.6	NAD	NAD
Location: Base Floor, Hallway O/S Elevator #9 On Plaster Wall - Cove Base Molding Adhesive								
10L1	10	7	0.281	9.9	87.0	3.1	NAD	NAD
Location: 2nd Floor, Hallway O/S Elevator #9, On Concrete Floor - 12" x 12" Floor Tile								
10L2	10	8	0.157	44.7	23.8	31.5	NAD	NAD
Location: 2nd Floor, Hallway O/S Elevator #9, On Concrete Floor - 12" x 12" Floor Tile Mastic (Gray)								

See Reporting notes on last page

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

MDS:21250.00-IN; SUNY New Paltz; Smiley Arts Building, 1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF 081058

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
11L1	11	7	0.274	10.1	87.0	3.0	NAD	NAD
Location: Base Floor, Hallway O/S Elevator #9, On Concrete Floor - 12" x 12" Floor Tile								
11L2	11	8	0.271	45.3	21.1	33.6	NAD	NAD
Location: Base Floor, Hallway O/S Elevator #9, On Concrete Floor - 12" x 12" Floor Tile Mastic (Gray)								
12	12	9	----	----	----	----	NAD	NA
Location: 2nd Floor, Hallway O/S Elevator #9, Floor - Concrete Slab								
13	13	9	----	----	----	----	NAD	NA
Location: Base Floor, Hallway O/S Elevator #9, Floor - Concrete Slab								
14	14	10	----	----	----	----	NAD	NA
Location: E Floor, Elevator #9 Cab, Floor Bottom Layer On Wood - Fiberboard								
15	15	10	----	----	----	----	NAD	NA
Location: E Floor, Elevator #9 Cab, Floor Bottom Layer On Wood - Fiberboard								
16L1	16	11	0.230	26.5	23.3	43.0	Chrysotile 7.2	NA
Location: E Floor, Elevator #9 Cab, Floor 2nd Layer - 9" x 9" Floor Tile (Gray)								
16L2	16	12	0.272	79.4	5.1	8.6	Chrysotile 6.9	NA
Location: E Floor, Elevator #9 Cab, Floor 2nd Layer - 9" x 9" Floor Tile Mastic (Gray)								
17L1	17	11	0.182	40.1	9.8	50.1	NA/PS	NA
Location: E Floor, Elevator #9 Cab, Floor 2nd Layer - 9" x 9" Floor Tile (Gray)								
17L2	17	12	0.212	67.5	3.8	28.7	NA/PS	NA
Location: E Floor, Elevator #9 Cab, Floor 2nd Layer - 9" x 9" Floor Tile Mastic (Gray)								
18L1	18	13	0.247	40.0	10.9	49.1	NAD	NAD
Location: E Floor, Elevator #9 Cab, Floor Top Layer On Tile - 18" x 18" Floor Tile (Gray)								
18L2	18	14	0.230	67.5	1.1	31.4	NAD	NAD
Location: E Floor, Elevator #9 Cab, Floor Top Layer On Tile - 18" x 18" Floor Tile Mastic (Gray)								
19L1	19	13	0.269	25.6	11.4	63.0	NAD	NAD
Location: E Floor, Elevator #9 Cab, Floor Top Layer On Tile - 18" x 18" Floor Tile (Gray)								
19L2	19	14	0.216	86.5	4.9	8.6	NAD	NAD
Location: E Floor, Elevator #9 Cab, Floor Top Layer On Tile - 18" x 18" Floor Tile Mastic (Gray)								

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

MDS:21250.00-IN; SUNY New Paltz; Smiley Arts Building, 1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF 081058

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
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Analyzed by: Gabriella Morozov
Date: 9/11/2021



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 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 09/10/21 **AmeriSci Job #** 221091863
Date Examined 09/11/21 **P.O. #**
ELAP # 11480 **Page** 1 **of** 6
RE: MDS:21250.00-IN; SUNY New Paltz; Smiley Arts Building, 1
Hawk Drive, New Paltz, NY 12561, Client Project #: SUCE 081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
1	221091863-01	No	NAD
1	Location: 2nd Floor, Outside Elevator (Hallway) Suspended 2' x 2' / 2' x 4' - Ceiling Tile		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 52.5%			
2	221091863-02	No	NAD
1	Location: Base Floor, Outside Elevator (Hallway) Suspended 2' x 2' / 2' x 4' - Ceiling Tile		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 36.3%			
3	221091863-03L1	No	NAD
2	Location: 2nd Floor, Hallway O/S Elevator #9, Wall Both Layers - Plaster - Skim Coat		(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100%			
3	221091863-03L2	No	NAD
3	Location: 2nd Floor, Hallway O/S Elevator #9, Wall Both Layers - Plaster - Base Coat		(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100%			
4	221091863-04L1	No	NAD
2	Location: 1st Floor, Hallway O/S Elevator #9, Wall Both Layers - Plaster - Skim Coat		(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS:21250.00-IN; SUNY New Paltz; Smiley Arts Building, 1
Hawk Drive, New Paltz, NY 12561, Client Project #: SUFC
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
4 3	221091863-04L2 Location: 1st Floor, Hallway O/S Elevator #9, Wall Both Layers - Plaster - Base Coat	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
5 2	221091863-05L1 Location: Base Floor, Hallway O/S Elevator #9, Wall Both Layers - Plaster - Skim Coat	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
5 3	221091863-05L2 Location: Base Floor, Hallway O/S Elevator #9, Wall Both Layers - Plaster - Base Coat	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
6 4	221091863-06 Location: 4th Floor, MER Perimeter Wall CMU - Mortar	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
7 4	221091863-07 Location: Shaft Floor, Pit Perimeter Wall CMU - Mortar	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
8 5	221091863-08L1 Location: 2nd Floor, Hallway O/S Elevator #9 On Plaster Wall - Cove Base Molding	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 3.9%			

Client Name: Adelaide Environmental Health

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MDS:21250.00-IN; SUNY New Paltz; Smiley Arts Building, 1
Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
8 6	221091863-08L2 Location: 2nd Floor, Hallway O/S Elevator #9 On Plaster Wall - Cove Base Molding Adhesive	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 21.4%			
9 5	221091863-09L1 Location: Base Floor, Hallway O/S Elevator #9 On Plaster Wall - Cove Base Molding	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 3%			
9 6	221091863-09L2 Location: Base Floor, Hallway O/S Elevator #9 On Plaster Wall - Cove Base Molding Adhesive	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 25.6%			
10 7	221091863-10L1 Location: 2nd Floor, Hallway O/S Elevator #9, On Concrete Floor - 12" x 12" Floor Tile	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 3.1%			
10 8	221091863-10L2 Location: 2nd Floor, Hallway O/S Elevator #9, On Concrete Floor - 12" x 12" Floor Tile Mastic (Gray)	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 31.5%			
11 7	221091863-11L1 Location: Base Floor, Hallway O/S Elevator #9, On Concrete Floor - 12" x 12" Floor Tile	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 3%			

PLM Bulk Asbestos Report

MDS:21250.00-IN; SUNY New Paltz; Smiley Arts Building, 1
Hawk Drive, New Paltz, NY 12561, Client Project #: SUFC
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
11	221091863-11L2	No	NAD
8	Location: Base Floor, Hallway O/S Elevator #9, On Concrete Floor - 12" x 12" Floor Tile Mastic (Gray)		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 33.6%			
12	221091863-12	No	NAD
9	Location: 2nd Floor, Hallway O/S Elevator #9, Floor - Concrete Slab		(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100%			
13	221091863-13	No	NAD
9	Location: Base Floor, Hallway O/S Elevator #9, Floor - Concrete Slab		(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100%			
14	221091863-14	No	NAD
10	Location: E Floor, Elevator #9 Cab, Floor Bottom Layer On Wood - Fiberboard		(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Brown, Homogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose 95%, Non-fibrous 5%			
15	221091863-15	No	NAD
10	Location: E Floor, Elevator #9 Cab, Floor Bottom Layer On Wood - Fiberboard		(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Brown, Homogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose 95%, Non-fibrous 5%			
16	221091863-16L1	Yes	7.2%
11	Location: E Floor, Elevator #9 Cab, Floor 2nd Layer - 9" x 9" Floor Tile (Gray)		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types: Chrysotile 7.2 %			
Other Material: Non-fibrous 43%			

Client Name: Adelaide Environmental Health

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Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF
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Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
16	221091863-16L2	Yes	6.9%
12	Location: E Floor, Elevator #9 Cab, Floor 2nd Layer - 9" x 9" Floor Tile Mastic (Gray)		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types: Chrysotile 6.9 %			
Other Material: Non-fibrous 8.6%			
17	221091863-17L1		NA/PS
11	Location: E Floor, Elevator #9 Cab, Floor 2nd Layer - 9" x 9" Floor Tile (Gray)		
Analyst Description: Bulk Material			
Asbestos Types:			
Other Material:			
17	221091863-17L2		NA/PS
12	Location: E Floor, Elevator #9 Cab, Floor 2nd Layer - 9" x 9" Floor Tile Mastic (Gray)		
Analyst Description: Bulk Material			
Asbestos Types:			
Other Material:			
18	221091863-18L1	No	NAD
13	Location: E Floor, Elevator #9 Cab, Floor Top Layer On Tile - 18" x 18" Floor Tile (Gray)		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 49.1%			
18	221091863-18L2	No	NAD
14	Location: E Floor, Elevator #9 Cab, Floor Top Layer On Tile - 18" x 18" Floor Tile Mastic (Gray)		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 31.4%			
19	221091863-19L1	No	NAD
13	Location: E Floor, Elevator #9 Cab, Floor Top Layer On Tile - 18" x 18" Floor Tile (Gray)		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 63%			

Client Name: Adelaide Environmental Health

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MDS:21250.00-IN; SUNY New Paltz; Smiley Arts Building, 1
Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
19	221091863-19L2	No	NAD
14	Location: E Floor, Elevator #9 Cab, Floor Top Layer On Tile - 18" x 18" Floor Tile Mastic (Gray)		(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 8.6%			

Reporting Notes:

Analyzed by: John P. Koubiadis
Date: 9/11/2021



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 Olympus, Model BH-2 Pol Scope, Microscope, Serial #: 223705, 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

№ 221091863

SUNY New Paltz

Site Address: <u>Smiley Arts Building</u>			Date: <u>9-8-2021</u>	Inspector(s) <u>Louis N. Johnson III</u>		
<u>1 Hawk Drive</u>			Client Project #: <u>SUCF 081058</u>	<u>0800-1630</u>		
<u>New Paltz, NY 12561</u>			Project #: <u>MDS!21250,00-IV</u>			
Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Frable NonFrable	Condition g, d, sd
1	1	2nd	Outside Elevator (Hallway) suspended 2'x2'x4' - ceiling Tile #9		F	G
2	1	Base	11		F	11
3	213	2nd	Hallway O/S Elevator #9, wall Both layers - plaster		11	11
4	213	1st	11		11	11
5	213	Base	11		11	11
6	4	4th	MER perimeter wall cmu - mortar		11	11
7	4	8th	Pit perimeter wall cmu - mortar		11	11
8	516	2nd	Hallway O/S Elevator #9 on plaster wall - Cove Base mulling + Adhesive		NI	11
9	516	Base	11		11	11
10	718	2nd	Hallway O/S Elevator #9, on concrete Floor - 12"x12" Floor Tile + Mastic (Grey)		11	11
11	718	Base	11		11	11
12	9	2nd	Hallway O/S Elevator #9 - Floor - concrete slabs		F	G
13	9	Base	11		11	11
Special Instructions/ Turnaround Time:			Relinquished by:			
Stop at 1st Positive per Homogenous Area			Received by: <u>Alexander Voicu</u> <u>9-10-21 1530</u>			
E-Mail Results to AdelaideLabResults@adelaidellc.com & ljohnson@adelaidellc.com			Relinquished by:			
			Received by:			

845-278-7750 - fax

Sunny New Paltz

Page 2 of 2

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

MDS:21250.00-IN; SUNY New Paltz; Coykendall Science Bldg, 1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF 081058

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	0.131	29.8	35.0	35.2	NAD	NAD
Location: 2nd Floor, Hallway O/S Elevator, Suspended, 2' x 2' / 2' x 4' - Ceiling Tile								
02	2	1	0.177	27.4	41.8	30.9	NAD	NAD
Location: Base Floor, Hallway O/S Elevator, Suspended, 2' x 2' / 2' x 4' - Ceiling Tile								
03	3	2	----	----	----	----	NAD	NA
Location: Penthouse Floor, MER Room Perimeter Wall - Sheetrock								
04	4	2	----	----	----	----	NAD	NA
Location: Base Floor, O/S Elevator Wall - Sheetrock								
05	5	3	----	----	----	----	NAD	NA
Location: PH Floor, MER Room On Sheetrock Wall - Joint Compound								
06	6	3	----	----	----	----	NAD	NA
Location: Base Floor, Hallway O/S Elevator On Sheetrock Wall - Joint Compound								
07	7	4	----	----	----	----	NAD	NA
Location: PH Floor, MER Room Perimeter Wall - CMU, Mortar								
08	8	4	----	----	----	----	NAD	NA
Location: Shaft Floor, Elevator Pit Perimeter Wall - CMU, Mortar								
09L1	9	5	0.287	44.1	53.6	2.3	NAD	NAD
Location: 3rd Floor, Hallway O/S Elevator On Sheetrock - Cove Base Molding								
09L2	9	6	0.371	49.9	25.5	24.7	NAD	NAD
Location: 3rd Floor, Hallway O/S Elevator On Sheetrock - Cove Base Molding Adhesive								
10L1	10	5	0.229	47.4	50.8	1.7	NAD	NAD
Location: 1st Floor, Hallway O/S Elevator On Sheetrock - Cove Base Molding								
10L2	10	6	0.242	67.2	6.8	26.0	NAD	NAD
Location: 1st Floor, Hallway O/S Elevator On Sheetrock - Cove Base Molding Adhesive								
11L1	11	7	0.211	11.4	81.2	7.5	NAD	NAD
Location: 3rd Floor, Hallway O/S Elevator, Floor, On Concrete - 12" x 12" Floor Tile								
11L2	11	8	0.172	85.3	12.9	1.7	NAD	NAD
Location: 3rd Floor, Hallway O/S Elevator, Floor, On Concrete - 12" x 12" Floor Tile Mastic								
12L1	12	7	0.240	11.9	81.8	6.3	NAD	NAD
Location: 1st Floor, Hallway O/S Elevator, Floor, On Concrete - 12" x 12" Floor Tile								
12L2	12	8	0.219	58.5	35.2	6.3	NAD	NAD
Location: 1st Floor, Hallway O/S Elevator, Floor, On Concrete - 12" x 12" Floor Tile Mastic								

See Reporting notes on last page

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

MDS:21250.00-IN; SUNY New Paltz; Coykendall Science Bldg, 1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF 081058

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
13	13	9	----	----	----	----	NAD	NA
Location: 3rd Floor, Hallway O/S Elevator, Floor - Concrete Slab								
14	14	9	----	----	----	----	NAD	NA
Location: 1st Floor, Hallway O/S Elevator, Floor - Concrete Slab								
15L1	15	10	0.454	43.4	42.6	14.0	NAD	NAD
Location: E Floor, Elevator Cab Floor, Under Carpet On Wood - 12" x 12" Floor Tile								
15L2	15	11	0.454	43.4	42.6	14.0	NAD	NAD
Location: E Floor, Elevator Cab Floor, Under Carpet On Wood - 12" x 12" Floor Tile Mastic								
16L1	16	10	0.222	11.9	83.7	4.4	NAD	NAD
Location: E Floor, Elevator Cab Floor, Under Carpet On Wood - 12" x 12" Floor Tile								
16L2	16	11	0.514	37.3	31.3	31.4	NAD	NAD
Location: E Floor, Elevator Cab Floor, Under Carpet On Wood - 12" x 12" Floor Tile Mastic								

Analyzed by: Gabriella Morozov



Reviewed by: Gabriella Morozov



Date: 9/11/2021

**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 09/10/21 **AmeriSci Job #** 221091864
Date Examined 09/11/21 **P.O. #**
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Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF 081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
1 1	221091864-01 Location: 2nd Floor, Hallway O/S Elevator, Suspended, 2' x 2' / 2' x 4' - Ceiling Tile	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 35.2%			
2 1	221091864-02 Location: Base Floor, Hallway O/S Elevator, Suspended, 2' x 2' / 2' x 4' - Ceiling Tile	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Heterogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 30.9%			
3 2	221091864-03 Location: Penthouse Floor, MER Room Perimeter Wall - Sheetrock	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Off-White, Homogeneous, Fibrous, Bulk Material Asbestos Types: Other Material: Fibrous glass 15%, Non-fibrous 85%			
4 2	221091864-04 Location: Base Floor, O/S Elevator Wall - Sheetrock	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Off-White, Homogeneous, Fibrous, Bulk Material Asbestos Types: Other Material: Cellulose 40%, Non-fibrous 60%			
5 3	221091864-05 Location: PH Floor, MER Room On Sheetrock Wall - Joint Compound	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			

PLM Bulk Asbestos Report

MDS:21250.00-IN; SUNY New Paltz; Coykendall Science Bldg,
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Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
6 3	221091864-06	No	NAD
Location: Base Floor, Hallway O/S Elevator On Sheetrock Wall - Joint Compound			(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100%			
7 4	221091864-07	No	NAD
Location: PH Floor, MER Room Perimeter Wall - CMU, Mortar			(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100%			
8 4	221091864-08	No	NAD
Location: Shaft Floor, Elevator Pit Perimeter Wall - CMU, Mortar			(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100%			
9 5	221091864-09L1	No	NAD
Location: 3rd Floor, Hallway O/S Elevator On Sheetrock - Cove Base Molding			(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 2.3%			
9 6	221091864-09L2	No	NAD
Location: 3rd Floor, Hallway O/S Elevator On Sheetrock - Cove Base Molding Adhesive			(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 24.7%			
10 5	221091864-10L1	No	NAD
Location: 1st Floor, Hallway O/S Elevator On Sheetrock - Cove Base Molding			(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 1.7%			

PLM Bulk Asbestos Report

MDS:21250.00-IN; SUNY New Paltz; Coykendall Science Bldg,
1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
10 6	221091864-10L2	No	NAD
Location: 1st Floor, Hallway O/S Elevator On Sheetrock - Cove Base Molding Adhesive			(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 26%			
11 7	221091864-11L1	No	NAD
Location: 3rd Floor, Hallway O/S Elevator, Floor, On Concrete - 12" x 12" Floor Tile			(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Blue, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 7.5%			
11 8	221091864-11L2	No	NAD
Location: 3rd Floor, Hallway O/S Elevator, Floor, On Concrete - 12" x 12" Floor Tile Mastic			(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 1.7%			
12 7	221091864-12L1	No	NAD
Location: 1st Floor, Hallway O/S Elevator, Floor, On Concrete - 12" x 12" Floor Tile			(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Blue, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 6.3%			
12 8	221091864-12L2	No	NAD
Location: 1st Floor, Hallway O/S Elevator, Floor, On Concrete - 12" x 12" Floor Tile Mastic			(by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 6.3%			
13 9	221091864-13	No	NAD
Location: 3rd Floor, Hallway O/S Elevator, Floor - Concrete Slab			(by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 100%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS:21250.00-IN; SUNY New Paltz; Coykendall Science Bldg,
1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
14 9	221091864-14 Location: 1st Floor, Hallway O/S Elevator, Floor - Concrete Slab	No	NAD (by NYS ELAP 198.1) by John P. Koubiadis on 09/11/21
Analyst Description: Grey, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
15 10	221091864-15L1 Location: E Floor, Elevator Cab Floor, Under Carpet On Wood - 12" x 12" Floor Tile	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Off-White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 14%			
15 11	221091864-15L2 Location: E Floor, Elevator Cab Floor, Under Carpet On Wood - 12" x 12" Floor Tile Mastic	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Yellow, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 14%			
16 10	221091864-16L1 Location: E Floor, Elevator Cab Floor, Under Carpet On Wood - 12" x 12" Floor Tile	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Off-White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 4.4%			
16 11	221091864-16L2 Location: E Floor, Elevator Cab Floor, Under Carpet On Wood - 12" x 12" Floor Tile Mastic	No	NAD (by NYS ELAP 198.6) by John P. Koubiadis on 09/11/21
Analyst Description: Yellow, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 31.4%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS:21250.00-IN; SUNY New Paltz; Coykendall Science Bldg,
1 Hawk Drive, New Paltz, NY 12561, Client Project #: SUCF
081058

Reporting Notes:

Analyzed by: John P. Koubiadis
Date: 9/11/2021



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 Olympus, Model BH-2 Pol Scope, Microscope, Serial #: 223705, 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

№ 221091864

SUNY New Paltz

Site Address: Coy Kendall Science Bldg			Date: 9-8-2021	Inspector(s) Louis N. Johnson III		
1 Hawk Drive			Client Project #: SUCF 081058	0800 - 1630		
New Paltz, NY 12561			Project #: MDS: 21250.00-IN			

Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable NonFriable	Condition g, d, sd
1	1	2nd	Hall O/S Elevator, suspended - 2'x2'1/2'x4' - ceiling Tile		F	G
2	1	Base	Hall O/S Elevator, suspended - 2'x2'1/2'x4' - ceiling Tile		F	G
3	2	Penthouse	MER Room perimeter wall - Sheetrock		11	11
4	2	Base	O/S Elevator wall - sheetrock		11	11
5	3	PH	MER Room on sheetrock wall - Joint Compound		11	11
6	3	Base	Hallway O/S Elevator on sheetrock wall - Joint Compound		11	11
7	4	PH	MER Room perimeter wall CMU - mortar		11	11
8	4	Shaft	Elevator pit perimeter wall - CMU - Mortar		11	11
9	5/6	3rd	Hallway O/S Elevator on sheetrock - Cove Base molding + Adhesive		NF	11
10	5/6	1st	11 11		11	11
11	7/8	3rd	Hallway O/S Elevator, floor, on concrete 12"x12" Floor Tile + mastic (blue/grey)		11	11
12	7/8	1st	11 11		11	11

Special Instructions/ Turnaround Time:		Relinquished by:	
Stop at 1st Positive per Homogenous Area		Received by: Alexandru Vucur 9-10-21 (153)	
E-Mail Results to AdelaideLabResults@adelaidehc.com & ljohnson@adelaidehc.com		Relinquished by:	
		Received by:	

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

SUM New Paltz

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Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

MDS: 21250.00-IN; SUNY New Paltz; Lecture Hall Bldg - 1 Hawk Drive, New Paltz, NY 12561; Client Project #: SUCF 081058

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	----	----	----	----	NAD	NA
Location: PH Floor Level, MER Perimeter Wall CMU - Mortar								
02	2	1	----	----	----	----	NAD	NA
Location: Grnd Floor Level, Hallway O/S Elevator #8, Wall CMU - Mortar								
03L1	3	2	0.227	66.2	32.0	1.9	NAD	NAD
Location: Projection Floor Level, Projection Room, On CMU Wall - Cove Base Molding								
03L2	3	3	0.241	54.6	13.6	31.7	NAD	NAD
Location: Projection Floor Level, Projection Room, On CMU Wall - Cove Base Molding Adhesive								
04L1	4	2	0.218	53.5	6.3	40.2	NAD	NAD
Location: SB Floor Level, Hall O/S Elevator #8 On CMU Wall - Cove Base Molding								
04L2	4	3	0.307	48.5	9.0	42.5	NAD	NAD
Location: SB Floor Level, Hall O/S Elevator #8 On CMU Wall - Cove Base Molding Adhesive								
05	5	4	----	----	----	----	NAD	NA
Location: PH Floor Level, MER Room, Floor - Concrete Slab								
06	6	4	----	----	----	----	NAD	NA
Location: Grnd Floor Level, Hall O/S Elevator #8 Floor - Concrete Slab								
07L1	7	5	0.348	25.2	9.8	49.7	Chrysotile 15.3	NA
Location: Projection Floor Level, Projection Room, Floor, On Concrete - 9"x9" Floor Tile (Beige)								
07L2	7	6	0.372	41.5	19.4	34.5	Chrysotile 4.4	NA
Location: Projection Floor Level, Projection Room, Floor, On Concrete - 9"x9" Floor Tile Mastic								
08L1	8	5	0.317	25.3	12.2	62.5	NA/PS	NA
Location: Projection Floor Level, Projection Room, Floor, On Concrete - 9"x9" Floor Tile (Beige)								
08L2	8	6	0.243	77.9	5.8	16.3	NA/PS	NA
Location: Projection Floor Level, Projection Room, Floor, On Concrete - 9"x9" Floor Tile Mastic								
09L1	9	7	0.398	27.1	47.1	20.0	Chrysotile 5.7	NA
Location: SB Floor Level, Hallway O/S Elevator #8, On Concrete Floor - 12"x12" Floor Tile (Beige)								
09L2	9	8	0.303	70.5	15.5	13.9	Chrysotile <0.25	Chrysotile Trace
Location: SB Floor Level, Hallway O/S Elevator #8, On Concrete Floor - 12"x12" Floor Tile Mastic								
10L1	10	7	0.321	26.6	47.6	25.8	NA/PS	NA
Location: SB Floor Level, Hallway O/S Elevator #8, On Concrete Floor - 12"x12" Floor Tile (Beige)								
10L2	10	8	0.373	67.3	17.9	14.7	Chrysotile <0.25	Chrysotile Trace
Location: SB Floor Level, Hallway O/S Elevator #8, On Concrete Floor - 12"x12" Floor Tile Mastic								

See Reporting notes on last page

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

MDS: 21250.00-IN; SUNY New Paltz; Lecture Hall Bldg - 1 Hawk Drive, New Paltz, NY 12561; Client Project #: SUCF 081058

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
11L1	11	9	0.343	31.1	18.4	38.6	Chrysotile 11.9	NA
Location: Grnd Floor Level, Hallway O/S Elevator #8, On Concrete Floor - 9"x9" Floor Tile (Brown)								
11L2	11	10	0.369	20.0	18.0	58.7	Chrysotile 3.3	NA
Location: Grnd Floor Level, Hallway O/S Elevator #8, On Concrete Floor - 9"x9" Floor Tile Mastic								
12L1	12	9	0.399	30.7	13.8	55.5	NA/PS	NA
Location: Grnd Floor Level, Hallway O/S Elevator #8, On Concrete Floor - 9"x9" Floor Tile (Brown)								
12L2	12	10	0.219	49.9	12.6	37.6	NA/PS	NA
Location: Grnd Floor Level, Hallway O/S Elevator #8, On Concrete Floor - 9"x9" Floor Tile Mastic								
13L1	13	11	0.296	33.7	4.4	61.9	NAD	NAD
Location: E Floor Level, Elevator #8 Cab Floor Top Layer, Rubber Tile (Grey)								
13L2	13	12	0.323	39.1	13.8	47.2	NAD	NAD
Location: E Floor Level, Elevator #8 Cab Floor Top Layer, Rubber Tile Mastic								
14L1	14	11	0.257	37.8	3.0	59.1	NAD	NAD
Location: E Floor Level, Elevator #8 Cab Floor Top Layer, Rubber Tile (Grey)								
14L2	14	12	0.166	49.8	49.2	1.0	NAD	NAD
Location: E Floor Level, Elevator #8 Cab Floor Top Layer, Rubber Tile Mastic								
15L1	15	13	0.276	25.0	16.3	45.0	Chrysotile 13.8	NA
Location: E Floor Level, Elevator #8 Cab Floor Bottom Layer On Wood 9"x9" - Floor Tile								
15L2	15	14	0.215	83.3	3.1	13.4	Chrysotile <0.25	Chrysotile Trace
Location: E Floor Level, Elevator #8 Cab Floor Bottom Layer On Wood 9"x9" - Floor Tile Mastic								
16L1	16	13	0.375	24.9	14.1	61.0	NA/PS	NA
Location: E Floor Level, Elevator #8 Cab Floor Bottom Layer On Wood 9"x9" - Floor Tile								
16L2	16	14	0.147	84.1	3.4	12.4	NAD	Chrysotile Trace
Location: E Floor Level, Elevator #8 Cab Floor Bottom Layer On Wood 9"x9" - Floor Tile Mastic								

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

MDS: 21250.00-IN; SUNY New Paltz; Lecture Hall Bldg - 1 Hawk Drive, New Paltz, NY 12561; Client Project #: SUCF 081058

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
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Analyzed by: Marik Peysakhov
Date: 9/10/2021



Reviewed by: Marik Peysakhov



**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 09/09/21 **AmeriSci Job #** 221091767
Date Examined 09/10/21 **P.O. #**
ELAP # 11480 **Page** 1 of 6
RE: MDS: 21250.00-IN; SUNY New Paltz; Lecture Hall Bldg - 1
Hawk Drive, New Paltz, NY 12561; Client Project #: SU CF 081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
1 1	221091767-01 Location: PH Floor Level, MER Perimeter Wall CMU - Mortar	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 09/10/21
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
2 1	221091767-02 Location: Grnd Floor Level, Hallway O/S Elevator #8, Wall CMU - Mortar	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 09/10/21
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
3 2	221091767-03L1 Location: Projection Floor Level, Projection Room, On CMU Wall - Cove Base Molding	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Dark Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 1.9%			
3 3	221091767-03L2 Location: Projection Floor Level, Projection Room, On CMU Wall - Cove Base Molding Adhesive	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Dark Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 31.7%			
4 2	221091767-04L1 Location: SB Floor Level, Hall O/S Elevator #8 On CMU Wall - Cove Base Molding	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Dark Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 40.2%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS: 21250.00-IN; SUNY New Paltz; Lecture Hall Bldg - 1
Hawk Drive, New Paltz, NY 12561; Client Project #: SUCF
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
4	221091767-04L2	No	NAD
3	Location: SB Floor Level, Hall O/S Elevator #8 On CMU Wall - Cove Base Molding Adhesive		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Dark Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 42.5%			
5	221091767-05	No	NAD
4	Location: PH Floor Level, MER Room, Floor - Concrete Slab		(by NYS ELAP 198.1) by Jared C. Clarke on 09/10/21
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
6	221091767-06	No	NAD
4	Location: Grnd Floor Level, Hall O/S Elevator #8 Floor - Concrete Slab		(by NYS ELAP 198.1) by Jared C. Clarke on 09/10/21
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
7	221091767-07L1	Yes	15.3%
5	Location: Projection Floor Level, Projection Room, Floor, On Concrete - 9"x9" Floor Tile (Beige)		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Chrysotile 15.3 % Other Material: Non-fibrous 49.7%			
7	221091767-07L2	Yes	4.5%
6	Location: Projection Floor Level, Projection Room, Floor, On Concrete - 9"x9" Floor Tile Mastic		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Chrysotile 4.4 % Other Material: Non-fibrous 34.5%			
8	221091767-08L1		NA/PS
5	Location: Projection Floor Level, Projection Room, Floor, On Concrete - 9"x9" Floor Tile (Beige)		
Analyst Description: Bulk Material Asbestos Types: Other Material:			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS: 21250.00-IN; SUNY New Paltz; Lecture Hall Bldg - 1
Hawk Drive, New Paltz, NY 12561; Client Project #: SUFC
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
8 6	221091767-08L2 Location: Projection Floor Level, Projection Room, Floor, On Concrete - 9"x9" Floor Tile Mastic		NA/PS
Analyst Description: Bulk Material Asbestos Types: Other Material:			
9 7	221091767-09L1 Location: SB Floor Level, Hallway O/S Elevator #8, On Concrete Floor - 12"x12" Floor Tile (Beige)	Yes	5.7% (by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Beige, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Chrysotile 5.7 % Other Material: Non-fibrous 20%			
9 8	221091767-09L2 Location: SB Floor Level, Hallway O/S Elevator #8, On Concrete Floor - 12"x12" Floor Tile Mastic	Yes	Trace (<0.25 % pc) ¹ (ELAP 400 PC) by Jared C. Clarke on 09/10/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Chrysotile <0.25 % pc Other Material: Non-fibrous 14%			
10 7	221091767-10L1 Location: SB Floor Level, Hallway O/S Elevator #8, On Concrete Floor - 12"x12" Floor Tile (Beige)		NA/PS
Analyst Description: Bulk Material Asbestos Types: Other Material:			
10 8	221091767-10L2 Location: SB Floor Level, Hallway O/S Elevator #8, On Concrete Floor - 12"x12" Floor Tile Mastic	Yes	Trace (<0.25 % pc) ¹ (ELAP 400 PC) by Jared C. Clarke on 09/10/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Chrysotile <0.25 % pc Other Material: Non-fibrous 14.8%			
11 9	221091767-11L1 Location: Grnd Floor Level, Hallway O/S Elevator #8, On Concrete Floor - 9"x9" Floor Tile (Brown)	Yes	11.9% (by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Chrysotile 11.9 % Other Material: Non-fibrous 38.6%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS: 21250.00-IN; SUNY New Paltz; Lecture Hall Bldg - 1
Hawk Drive, New Paltz, NY 12561; Client Project #: SUFC
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
11	221091767-11L2	Yes	3.3% ¹
10	Location: Grnd Floor Level, Hallway O/S Elevator #8, On Concrete Floor - 9"x9" Floor Tile Mastic		(ELAP 400 PC) by Jared C. Clarke on 09/10/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types: Chrysotile 3.3 %			
Other Material: Non-fibrous 58.7%			
12	221091767-12L1		NA/PS
9	Location: Grnd Floor Level, Hallway O/S Elevator #8, On Concrete Floor - 9"x9" Floor Tile (Brown)		
Analyst Description: Bulk Material			
Asbestos Types:			
Other Material:			
12	221091767-12L2		NA/PS
10	Location: Grnd Floor Level, Hallway O/S Elevator #8, On Concrete Floor - 9"x9" Floor Tile Mastic		
Analyst Description: Bulk Material			
Asbestos Types:			
Other Material:			
13	221091767-13L1	No	NAD
11	Location: E Floor Level, Elevator #8 Cab Floor Top Layer, Rubber Tile (Grey)		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 61.9%			
13	221091767-13L2	No	NAD
12	Location: E Floor Level, Elevator #8 Cab Floor Top Layer, Rubber Tile Mastic		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Yellow, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 47.2%			
14	221091767-14L1	No	NAD
11	Location: E Floor Level, Elevator #8 Cab Floor Top Layer, Rubber Tile (Grey)		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 59.1%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS: 21250.00-IN; SUNY New Paltz; Lecture Hall Bldg - 1
Hawk Drive, New Paltz, NY 12561; Client Project #: SUCF
081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
14	221091767-14L2	No	NAD
12	Location: E Floor Level, Elevator #8 Cab Floor Top Layer, Rubber Tile Mastic		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Yellow, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 1%			
15	221091767-15L1	Yes	13.8%
13	Location: E Floor Level, Elevator #8 Cab Floor Bottom Layer On Wood 9"x9" - Floor Tile		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Tan, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Chrysotile 13.8 % Other Material: Non-fibrous 45%			
15	221091767-15L2	Yes	Trace (<0.25 % pc) ¹
14	Location: E Floor Level, Elevator #8 Cab Floor Bottom Layer On Wood 9"x9" - Floor Tile Mastic		(ELAP 400 PC) by Jared C. Clarke on 09/10/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Chrysotile <0.25 % pc Other Material: Non-fibrous 13.5%			
16	221091767-16L1		NA/PS
13	Location: E Floor Level, Elevator #8 Cab Floor Bottom Layer On Wood 9"x9" - Floor Tile		
Analyst Description: Bulk Material Asbestos Types: Other Material:			
16	221091767-16L2	No	NAD
14	Location: E Floor Level, Elevator #8 Cab Floor Bottom Layer On Wood 9"x9" - Floor Tile Mastic		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 12.5%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS: 21250.00-IN; SUNY New Paltz; Lecture Hall Bldg - 1
Hawk Drive, New Paltz, NY 12561; Client Project #: SU CF
081058

Reporting Notes:

(1) Sample prepared for analysis by ELAP 198.6 method

Analyzed by: Jared C. Clarke
Date: 9/10/2021



Reviewed by: Marik Peysakhov



*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 #: 1190000326, 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


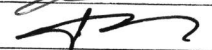
1511 Route 22, Suite C24

Brewster, NY 10509

845-278-7710

845-278-7750 - fax

SUNY New Paltz

Site Address: Lecture Hall Bldg		Date: 9-9-2021	Inspector(s) Louis N. Johnson III			
1 Hawk Drive		Client Project #: SUCF 081058	0800-1200			
New Paltz, NY 12561		Project #: MDS: 21250100-IN				
Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable NonFriable	Condition g, d, sd
1	1	PH	MER perimeter wall cmu - mortar		F	G
2	1	Grnd	Hallway OIS Elevator #8, wall cmu - mortar		F	11
3	213	Projection	Projection Room, cmu wall - Cove Base molding + Adhesive		NF	D
4	213	SB	Hall OIS Elevator #8 on cmu wall - Cove Base molding + Adhesive		11	11
5	4	PH	MER Room, Floor - concrete slab		F	G
6	4	Grnd	Hall OIS Elevator #8 Floor - concrete slab		F	G
7	516	projection	Projection Room, Floor, on concrete - 9"x9" Floor Tile + mastic		NF	D
8	516	11	11		11	D
9	718	SB	Hallway OIS Elevator #8, on concrete floor - 12"x12" Floor Tile + mastic		11	G
10	718	SB	11		11	G
11	9110	Grnd	Hallway OIS Elevator #8, on concrete floor - 9"x9" Floor Tile + mastic		11	G
12	9110	11	11		11	G
			NO 221091767	11		
Special Instructions/ Turnaround Time:			Relinquished by: 			
Stop at 1st Positive per Homogenous Area			Received by: 			
E-Mail Results to AdelaideLabResults@adelaidellc.com & ljohnson@adelaidellc.com			Relinquished by:			
			Received by:			

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

SUNY New Paltz

№ 221091767

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

MDS: 21250.00-IN; SUNY New Paltz; Sojourner Truth Library Bldg - 1 Hawk Drive, New Paltz, NY 12561; Client Project #: SUCF 081058

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	----	----	----	----	NAD	NA
Location: 2nd Floor Level, East Elevator #3 Hallway Wall - Sheetrock								
02	2	1	----	----	----	----	NAD	NA
Location: 1st Floor Level, West Elevator #32 Hallway Wall - Sheetrock								
03	3	2	----	----	----	----	NAD	NA
Location: 2nd Floor Level, East Elevator #3 Hallway Wall On Sheetrock - Joint Compound								
04	4	2	----	----	----	----	NAD	NA
Location: 1st Floor Level, West Elevator #2 Hallway Wall On Sheetrock - Joint Compound								
05	5	3	----	----	----	----	NAD	NA
Location: 1st Floor Level, East MER Perimeter Wall - CMU Mortar								
06	6	3	----	----	----	----	NAD	NA
Location: 1st Floor Level, West MER Perimeter Wall - CMU Mortar								
07L1	7	4	0.381	56.2	4.1	39.7	NAD	NAD
Location: 1st Floor Level, East MER On Sheetrock Wall - Cove Base Molding								
07L2	7	5	0.475	48.4	10.6	40.9	NAD	NAD
Location: 1st Floor Level, East MER On Sheetrock Wall - Cove Base Molding Adhesive								
08L1	8	4	0.234	53.7	4.9	41.4	NAD	NAD
Location: 1st Floor Level, East MER On Sheetrock Wall - Cove Base Molding								
08L2	8	5	0.203	46.3	6.2	47.5	NAD	NAD
Location: 1st Floor Level, East MER On Sheetrock Wall - Cove Base Molding Adhesive								
09L1	9	6	0.195	62.7	36.7	0.6	NAD	NAD
Location: Concourse Floor Level, Main, Hall O/S Elevator #1 On Sheetrock - Cove Base Molding								
09L2	9	7	0.320	29.5	65.5	5.0	NAD	NAD
Location: Concourse Floor Level, Main, Hall O/S Elevator #1 On Sheetrock - Cove Base Molding Adhesive								
10L1	10	6	0.213	63.3	31.7	5.1	NAD	NAD
Location: 1st Floor Level, West, Hall O/S Elevator #2 On Sheetrock - Cove Base Molding								
10L2	10	7	0.311	46.3	47.4	6.2	NAD	NAD
Location: 1st Floor Level, West, Hall O/S Elevator #2 On Sheetrock - Cove Base Molding Adhesive								
11	11	8	----	----	----	----	NAD	NA
Location: 2nd Floor Level, West, Floor - Concrete Slab O/S Elevator #2								
12	12	8	----	----	----	----	NAD	NA
Location: 1st Floor Level, East Floor, Concrete Slab O/S Elevator #3								

See Reporting notes on last page

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

MDS: 21250.00-IN; SUNY New Paltz; Sojourner Truth Library Bldg - 1 Hawk Drive, New Paltz, NY 12561; Client Project #: SUCF 081058

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
13	13	9	0.573	29.1	21.0	49.9	NAD	NAD
Location: Concourse Floor Level, Main Hallway O/S Elevator #1, On Concrete Floor - Carpet Mastic								
14	14	9	0.304	47.3	2.2	50.5	NAD	NAD
Location: Grnd Floor Level, Main Hallway O/S Elevator #1, On Concrete Floor - Carpet Mastic								
15	15	10	0.288	47.5	32.6	20.0	NAD	NAD
Location: 2nd Floor Level, East Hallway O/S Elevator #3, On Concrete Floor - Carpet Mastic								
16	16	10	0.214	45.7	12.6	41.6	NAD	NAD
Location: 1st Floor Level, East Hallway O/S Elevator #3, On Concrete Floor - Carpet Mastic								
17L1	17	11	0.323	12.8	82.6	4.6	NAD	NAD
Location: 1st Floor Level, West, Hallway O/s Elevator #2, On Concrete, 12"x12" Floor Tile (Beige)								
17L2	17	12	0.396	53.7	29.1	17.2	NAD	NAD
Location: 1st Floor Level, West, Hallway O/s Elevator #2, On Concrete, 12"x12" Floor Tile Mastic								
18L1	18	11	0.300	13.0	83.0	3.9	NAD	NAD
Location: 1st Floor Level, West, Hallway O/s Elevator #2, On Concrete, 12"x12" Floor Tile (Beige)								
18L2	18	12	0.424	40.0	45.5	14.6	NAD	NAD
Location: 1st Floor Level, West, Hallway O/s Elevator #2, On Concrete, 12"x12" Floor Tile Mastic								
19	19	13	0.285	95.0	3.1	2.0	NAD	NAD
Location: E Floor Level, Elevator #1 (Main) Cab Floor, On Wood - Carpet Mastic								
20	20	13	0.250	95.8	1.4	2.8	NAD	NAD
Location: E Floor Level, Elevator #1 (Main) Cab Floor, On Wood - Carpet Mastic								
21L1	21	14	0.292	14.7	81.8	3.5	NAD	NAD
Location: E Floor Level, Elevator #2 (West) Cab Floor, Bottom Layer Under Carpet On Wood (Grey) - 12"x12" Floor Tile								
21L2	21	15	0.160	66.4	21.9	11.7	NAD	NAD
Location: E Floor Level, Elevator #2 (West) Cab Floor, Bottom Layer Under Carpet On Wood (Grey) - 12"x12" Floor Tile Mastic								
22L1	22	14	0.375	15.9	79.9	4.2	NAD	NAD
Location: E Floor Level, Elevator #2 (West) Cab Floor, Bottom Layer Under Carpet On Wood (Grey) - 12"x12" Floor Tile								
22L2	22	15	0.292	53.1	22.2	24.7	NAD	NAD
Location: E Floor Level, Elevator #2 (West) Cab Floor, Bottom Layer Under Carpet On Wood (Grey) - 12"x12" Floor Tile Mastic								
23	23	16	----	----	----	----	NAD	NA
Location: E Floor Level, Elevator #3 (East) Cab, Floor, Bottom Layer On Wood - Fiberboard								
24	24	16	----	----	----	----	NAD	NA
Location: E Floor Level, Elevator #3 (East) Cab, Floor, Bottom Layer On Wood - Fiberboard								

See Reporting notes on last page

Client Name: Adelaide Environmental Health

Table I
Summary of Bulk Asbestos Analysis Results

MDS: 21250.00-IN; SUNY New Paltz; Sojourner Truth Library Bldg - 1 Hawk Drive, New Paltz, NY 12561; Client Project #: SUCF 081058

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
25L1	25	17	0.458	12.2	84.0	3.8	NAD	NAD
Location: E Floor Level, Elevator #3 (East) Cab, Floor Top Layer - 12"x12" Floor Tile								
25L2	25	18	0.116	79.8	7.1	13.1	NAD	NAD
Location: E Floor Level, Elevator #3 (East) Cab, Floor Top Layer - 12"x12" Floor Tile Mastic								
26L1	26	17	0.306	13.2	82.3	4.5	NAD	NAD
Location: E Floor Level, Elevator #3 (East) Cab, Floor Top Layer - 12"x12" Floor Tile								
26L2	26	18	0.224	82.7	7.3	10.0	NAD	NAD
Location: E Floor Level, Elevator #3 (East) Cab, Floor Top Layer - 12"x12" Floor Tile Mastic								

Analyzed by: Marik Peysakhov

Date: 9/10/2021



Reviewed by: Marik Peysakhov



**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 09/09/21 **AmeriSci Job #** 221091768
Date Examined 09/10/21 **P.O. #**
ELAP # 11480 **Page** 1 of 7
RE: MDS: 21250.00-IN; SUNY New Paltz; Sojourner Truth Library
Bldg - 1 Hawk Drive, New Paltz, NY 12561; Client Project #:
SUCF 081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
1 1	221091768-01 Location: 2nd Floor Level, East Elevator #3 Hallway Wall - Sheetrock	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 09/10/21
Analyst Description: Gray/Brown, Heterogeneous, Fibrous, Bulk Material Asbestos Types: Other Material: Cellulose 18%, Non-fibrous 82%			
2 1	221091768-02 Location: 1st Floor Level, West Elevator #32 Hallway Wall - Sheetrock	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 09/10/21
Analyst Description: Gray/Brown, Heterogeneous, Fibrous, Bulk Material Asbestos Types: Other Material: Cellulose 20%, Non-fibrous 80%			
3 2	221091768-03 Location: 2nd Floor Level, East Elevator #3 Hallway Wall On Sheetrock - Joint Compound	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 09/10/21
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
4 2	221091768-04 Location: 1st Floor Level, West Elevator #2 Hallway Wall On Sheetrock - Joint Compound	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 09/10/21
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
5 3	221091768-05 Location: 1st Floor Level, East MER Perimeter Wall - CMU Mortar	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 09/10/21
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

MDS: 21250.00-IN; SUNY New Paltz; Sojourner Truth Library
Bldg - 1 Hawk Drive, New Paltz, NY 12561; Client Project #:
SUCF 081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
6 3	221091768-06 Location: 1st Floor Level, West MER Perimeter Wall - CMU Mortar	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 09/10/21
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
7 4	221091768-07L1 Location: 1st Floor Level, East MER On Sheetrock Wall - Cove Base Molding	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 39.7%			
7 5	221091768-07L2 Location: 1st Floor Level, East MER On Sheetrock Wall - Cove Base Molding Adhesive	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 40.9%			
8 4	221091768-08L1 Location: 1st Floor Level, East MER On Sheetrock Wall - Cove Base Molding	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 41.4%			
8 5	221091768-08L2 Location: 1st Floor Level, East MER On Sheetrock Wall - Cove Base Molding Adhesive	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 47.5%			
9 6	221091768-09L1 Location: Concourse Floor Level, Main, Hall O/S Elevator #1 On Sheetrock - Cove Base Molding	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Black/Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 0.6%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS: 21250.00-IN; SUNY New Paltz; Sojourner Truth Library
Bldg - 1 Hawk Drive, New Paltz, NY 12561; Client Project #:
SUCF 081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
9 7	221091768-09L2	No	NAD
Location: Concourse Floor Level, Main, Hall O/S Elevator #1 On Sheetrock - Cove Base Molding Adhesive			(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Yellow, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 5%			
10 6	221091768-10L1	No	NAD
Location: 1st Floor Level, West, Hall O/S Elevator #2 On Sheetrock - Cove Base Molding			(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 5.1%			
10 7	221091768-10L2	No	NAD
Location: 1st Floor Level, West, Hall O/S Elevator #2 On Sheetrock - Cove Base Molding Adhesive			(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Yellow, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 6.2%			
11 8	221091768-11	No	NAD
Location: 2nd Floor Level, West, Floor - Concrete Slab O/S Elevator #2			(by NYS ELAP 198.1) by Jared C. Clarke on 09/10/21
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
12 8	221091768-12	No	NAD
Location: 1st Floor Level, East Floor, Concrete Slab O/S Elevator #3			(by NYS ELAP 198.1) by Jared C. Clarke on 09/10/21
Analyst Description: Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Non-fibrous 100%			
13 9	221091768-13	No	NAD
Location: Concourse Floor Level, Main Hallway O/S Elevator #1, On Concrete Floor - Carpet Mastic			(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Yellow, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 49.9%			

PLM Bulk Asbestos Report

MDS: 21250.00-IN; SUNY New Paltz; Sojourner Truth Library
Bldg - 1 Hawk Drive, New Paltz, NY 12561; Client Project #:
SUCF 081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
14 9	221091768-14	No	NAD
Location: Grnd Floor Level, Main Hallway O/S Elevator #1, On Concrete Floor - Carpet Mastic			(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Yellow, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 50.5%			
15 10	221091768-15	No	NAD
Location: 2nd Floor Level, East Hallway O/S Elevator #3, On Concrete Floor - Carpet Mastic			(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Yellow/Black, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 20%			
16 10	221091768-16	No	NAD
Location: 1st Floor Level, East Hallway O/S Elevator #3, On Concrete Floor - Carpet Mastic			(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Yellow, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 41.6%			
17 11	221091768-17L1	No	NAD
Location: 1st Floor Level, West, Hallway O/s Elevator #2, On Concrete, 12"x12" Floor Tile (Beige)			(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Beige, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 4.6%			
17 12	221091768-17L2	No	NAD
Location: 1st Floor Level, West, Hallway O/s Elevator #2, On Concrete, 12"x12" Floor Tile Mastic			(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 17.2%			
18 11	221091768-18L1	No	NAD
Location: 1st Floor Level, West, Hallway O/s Elevator #2, On Concrete, 12"x12" Floor Tile (Beige)			(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Beige, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 3.9%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS: 21250.00-IN; SUNY New Paltz; Sojourner Truth Library
Bldg - 1 Hawk Drive, New Paltz, NY 12561; Client Project #:
SUCF 081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
18	221091768-18L2	No	NAD
12	Location: 1st Floor Level, West, Hallway O/s Elevator #2, On Concrete, 12"x12" Floor Tile Mastic		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 14.6%			
19	221091768-19	No	NAD
13	Location: E Floor Level, Elevator #1 (Main) Cab Floor, On Wood - Carpet Mastic		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Yellow/Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 2%			
20	221091768-20	No	NAD
13	Location: E Floor Level, Elevator #1 (Main) Cab Floor, On Wood - Carpet Mastic		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Yellow/Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 2.8%			
21	221091768-21L1	No	NAD
14	Location: E Floor Level, Elevator #2 (West) Cab Floor, Bottom Layer Under Carpet On Wood (Grey) - 12"x12" Floor Tile		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 3.5%			
21	221091768-21L2	No	NAD
15	Location: E Floor Level, Elevator #2 (West) Cab Floor, Bottom Layer Under Carpet On Wood (Grey) - 12"x12" Floor Tile Mastic		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Yellowish Brown, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 11.7%			
22	221091768-22L1	No	NAD
14	Location: E Floor Level, Elevator #2 (West) Cab Floor, Bottom Layer Under Carpet On Wood (Grey) - 12"x12" Floor Tile		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 4.2%			

PLM Bulk Asbestos Report

MDS: 21250.00-IN; SUNY New Paltz; Sojourner Truth Library
Bldg - 1 Hawk Drive, New Paltz, NY 12561; Client Project #:
SUCF 081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
22	221091768-22L2	No	NAD
15	Location: E Floor Level, Elevator #2 (West) Cab Floor, Bottom Layer Under Carpet On Wood (Grey) - 12"x12" Floor Tile Mastic		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Yellowish Brown, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 24.7%			
23	221091768-23	No	NAD
16	Location: E Floor Level, Elevator #3 (East) Cab, Floor, Bottom Layer On Wood - Fiberboard		(by NYS ELAP 198.1) by Jared C. Clarke on 09/10/21
Analyst Description: Brown, Homogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose 80%, Non-fibrous 20%			
24	221091768-24	No	NAD
16	Location: E Floor Level, Elevator #3 (East) Cab, Floor, Bottom Layer On Wood - Fiberboard		(by NYS ELAP 198.1) by Jared C. Clarke on 09/10/21
Analyst Description: Brown, Homogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose 80%, Non-fibrous 20%			
25	221091768-25L1	No	NAD
17	Location: E Floor Level, Elevator #3 (East) Cab, Floor Top Layer - 12"x12" Floor Tile		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Beige, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 3.8%			
25	221091768-25L2	No	NAD
18	Location: E Floor Level, Elevator #3 (East) Cab, Floor Top Layer - 12"x12" Floor Tile Mastic		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 13.1%			
26	221091768-26L1	No	NAD
17	Location: E Floor Level, Elevator #3 (East) Cab, Floor Top Layer - 12"x12" Floor Tile		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Beige, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 4.5%			

Client Name: Adelaide Environmental Health

PLM Bulk Asbestos Report

MDS: 21250.00-IN; SUNY New Paltz; Sojourner Truth Library
Bldg - 1 Hawk Drive, New Paltz, NY 12561; Client Project #:
SUCF 081058

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
26	221091768-26L2	No	NAD
18	Location: E Floor Level, Elevator #3 (East) Cab, Floor Top Layer - 12"x12" Floor Tile Mastic		(by NYS ELAP 198.6) by Jared C. Clarke on 09/10/21
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 10%			

Reporting Notes:

Analyzed by: Jared C. Clarke
Date: 9/10/2021



Reviewed by: Marik Peysakhov



*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 #: 1190000326, 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

№ 221091768

SUNY New Paltz

Site Address: <u>Sojourner Truth Library Bldg</u>			Date: <u>9-9-2021</u>	Inspector(s) Louis N. Johnson III		
<u>1 Hawk Drive</u>			Client Project #: <u>SUCF081058</u>	<u>0800-1200</u>		
<u>New Paltz, NY 12561</u>			Project #: <u>MDS: 21250.00-IN</u>			
Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable NonFriable	Condition g, d, sd
<u>1</u>	<u>1</u>	<u>2nd</u>	<u>East Elevator #3 Hallway wall - Sheetrock</u>		<u>F</u>	<u>G</u>
<u>2</u>	<u>1</u>	<u>1st</u>	<u>West Elevator #2 Hallway wall - Sheetrock</u>		<u>11</u>	<u>G</u>
<u>3</u>	<u>2</u>	<u>2nd</u>	<u>East Elevator #3 Hallway wall on Sheetrock - Joint compound</u>		<u>11</u>	<u>11</u>
<u>4</u>	<u>2</u>	<u>1st</u>	<u>West Elevator #2 11 11</u>		<u>11</u>	<u>11</u>
<u>5</u>	<u>3</u>	<u>11</u>	<u>East MER perimeter wall - cmu mortar</u>		<u>11</u>	<u>11</u>
<u>6</u>	<u>3</u>	<u>11</u>	<u>West 11 11</u>		<u>11</u>	<u>11</u>
<u>7</u>	<u>415</u>	<u>1st</u>	<u>East MER on Sheetrock wall CEMENT Cove Base Molding + Adhesive</u>		<u>NR</u>	<u>G</u>
<u>8</u>	<u>415</u>	<u>11</u>	<u>11 11</u>		<u>11</u>	<u>11</u>
<u>9</u>	<u>617</u>		<u>Concourse Main, Hall 015 Elevator #1 on Sheetrock Cove Base Molding + Adhesive</u>		<u>11</u>	<u>11</u>
<u>10</u>	<u>617</u>	<u>1st</u>	<u>West, Hall 015 Elevator #2 on Sheetrock Cove Base Molding + Adhesive</u>		<u>11</u>	<u>11</u>
<u>11</u>	<u>8</u>	<u>2nd</u>	<u>West, Floor - Concrete slab 015 Elevator #2</u>		<u>F</u>	<u>11</u>
<u>12</u>	<u>8</u>	<u>1st</u>	<u>East, Floor, concrete slab 015 Elevator #3</u>		<u>F</u>	<u>11</u>
Special Instructions/ Turnaround Time:						
Stop at 1st Positive per Homogenous Area			Relinquished by: <u>[Signature]</u>			
E-Mail Results to AdelaideLabResults@adelaidellc.com & ljohnson@adelaidellc.com			Received by: <u>[Signature]</u> <u>9/9/21 150</u>			
			Relinquished by:			
			Received by:			

Adelaide Environmental Health Associates, Inc

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

№ 221091768

SUNY New Paltz

Site Address: <u>Schurmer Truth Library Bldg</u>		Date: <u>9-9-2021</u>		Inspector(s) Louis N. Johnson III		
<u>1 Hawk Drive</u>		Client Project #: <u>SUCF 081058</u>		<u>0800-1200</u>		
<u>New Paltz, NY 12561</u>		Project #: <u>MDS: 21250.00 - IN</u>				
Sample ID #	Homogeneous Area	Floor Level	Sample Location/Description	Quantity (In Feet)	Friable NonFriable	Condition g, d, sd
13	9	Conc	Hallway 015 Elevator #1, on Concrete Floor - carpet mastic		NF	G
14	9	Conc	11		11	11
15	10	2nd	East, Hallway 015 Elevator #3, on concrete floor - carpet mastic		11	11
16	10	1st	11		11	11
17	11/12	11	West 1 Hallway 015 Elevator #2, on concrete, 12"x12" floor tile + mastic		NF	11
18	11/12	11	11		11	11
19	13	E	Elevator #1 (main) Cab Floor, on wood - carpet mastic		11	11
20	13	E	11		11	11
21	14/15	11	Elevator #2 (west) Cab Floor, Bottom Layer under carpet on wood (gray) 12"x12" - Floor tile + mastic		NF	11
22	14/15	11	11		11	11
23	16	11	Elevator #3 (East) Cab Floor, Bottom Layer on wood - Fiberboard		F	11
24	16	11	11		F	11
Special Instructions/ Turnaround Time:				Relinquished by:		
Stop at 1st Positive per Homogenous Area				Received by: <u>[Signature]</u> <u>8/5/21 1820</u>		
E-Mail Results to AdelaideLabResults@adelaidellc.com & ljohnson@adelaidellc.com				Relinquished by:		
				Received by:		

845-278-7750 - fax

~~No 221091768~~
uis N. Johnson III

APPENDIX D
XRF READINGS

Reading #	Date	Time	Building	Space Type	Floor	Room	Component	Side	Substrate	Color	Condition	Lead Concentration (mg/cm2)	Result
1	9/8/2021	8:35:48				Calibration						1.2	Positive
2	9/8/2021	8:36:10				Calibration						1.1	Positive
3	9/8/2021	8:36:33				Calibration						1.1	Positive
4	9/8/2021	8:37:51	HBA	College	9th Floor	MER	Wall		CMU	White	Fair	0.4	Negative
5	9/8/2021	8:38:35	HBA	College	9th Floor	MER	Door		Metal	Grey	Fair	0.2	Negative
6	9/8/2021	8:38:58	HBA	College	9th Floor	MER	Door Case		Metal	Grey	Fair	0	Negative
7	9/8/2021	8:39:31	HBA	College	9th Floor	MER	Floor		Concrete	Grey	Fair	0.1	Negative
8	9/8/2021	8:40:09	HBA	College	9th Floor	MER	Cabinet		Metal	Beige	Fair	0.1	Negative
9	9/8/2021	8:41:05	HBA	College	9th Floor	MER	Motor		Metal	Dark Grey	Fair	0.4	Negative
10	9/8/2021	8:41:42	HBA	College	9th Floor	MER	Base		Metal	Black	Fair	0.4	Negative
11	9/8/2021	8:52:28	HBA	College	8th Floor	Hallway	Wall		Sheetrock	White	Fair	0.1	Negative
12	9/8/2021	8:53:59	HBA	College	8th Floor	Hallway	Door		Sheetrock	Grey	Fair	0.3	Negative
13	9/8/2021	8:54:20	HBA	College	8th Floor	Hallway	Door Case		Sheetrock	Grey	Fair	0.3	Negative
14	9/8/2021	9:42:11	HBA	College	8th Floor	Elevator Cab	Wall		Wood	Grey	Fair	-0.1	Negative
15	9/8/2021	10:00:10	SUB	College	4th Floor	MER	Wall		CMU	White	Fair	0.2	Negative
16	9/8/2021	10:00:36	SUB	College	4th Floor	MER	Floor		Concrete	White	Fair	0.4	Negative
17	9/8/2021	10:01:20	SUB	College	4th Floor	MER	Door		Metal	Grey	Fair	0.1	Negative
18	9/8/2021	10:01:44	SUB	College	4th Floor	MER	Door Case		Metal	Grey	Fair	0.4	Negative
19	9/8/2021	10:02:21	SUB	College	4th Floor	MER	Cabinet		Metal	Beige	Fair	0.1	Negative
20	9/8/2021	10:03:34	SUB	College	4th Floor	MER	Motor		Metal	Grey	Fair	0.4	Negative
21	9/8/2021	10:04:27	SUB	College	4th Floor	MER	Cabinet		Metal	Grey	Fair	0.1	Negative
22	9/8/2021	10:30:05	SUB	College	3rd Floor	Hallway	Wall		Sheetrock	White	Fair	0.1	Negative
23	9/8/2021	10:30:52	SUB	College	3rd Floor	Hallway	Door Case		Metal	Grey	Fair	0.2	Negative
24	9/8/2021	10:31:28	SUB	College	3rd Floor	Hallway	Door		Metal	Grey	Fair	0.2	Negative
25	9/8/2021	12:17:00	SAB	College	4th Floor	MER	Wall		CMU	White	Fair	0	Negative
26	9/8/2021	12:17:47	SAB	College	4th Floor	MER	Door		Metal	Beige	Fair	0.1	Negative
27	9/8/2021	12:18:27	SAB	College	4th Floor	MER	Door Case		Metal	Grey	Fair	0.3	Negative
28	9/8/2021	12:19:06	SAB	College	4th Floor	MER	Floor		Concrete	Grey	Fair	0.7	Negative
29	9/8/2021	12:20:02	SAB	College	4th Floor	MER	Cabinet		Metal	Brown	Fair	0.1	Negative
30	9/8/2021	12:20:33	SAB	College	4th Floor	MER	Motor		Metal	Grey	Fair	0.6	Negative
31	9/8/2021	12:21:22	SAB	College	4th Floor	MER	Base		Metal	Black	Fair	0.3	Negative
32	9/8/2021	12:22:28	SAB	College	4th Floor	MER	Ceiling		Plaster	White	Fair	-0.3	Negative
33	9/8/2021	13:03:31	SAB	College	4th Floor	Hallway	Wall		Plaster	White	Fair	0.3	Negative
34	9/8/2021	13:04:09	SAB	College	4th Floor	Hallway	Door Case		Metal	White	Fair	-0.1	Negative
35	9/8/2021	13:04:31	SAB	College	4th Floor	Hallway	Door		Metal	White	Fair	0.3	Negative
36	9/8/2021	13:31:47	CSB	College	Penthouse	MER	Door		Metal	Grey	Fair	0.1	Negative
37	9/8/2021	13:32:24	CSB	College	Penthouse	MER	Door Case		Metal	Grey	Fair	0.1	Negative
38	9/8/2021	13:32:58	CSB	College	Penthouse	MER	Wall		Sheetrock	White	Fair	0	Negative
39	9/8/2021	13:33:21	CSB	College	Penthouse	MER	Wall		CMU	White	Fair	0.2	Negative
40	9/8/2021	13:33:57	CSB	College	Penthouse	MER	Wall		Brick	White	Fair	0.1	Negative
41	9/8/2021	13:35:36	CSB	College	Penthouse	MER	Motor		Metal	Green	Fair	0.3	Negative

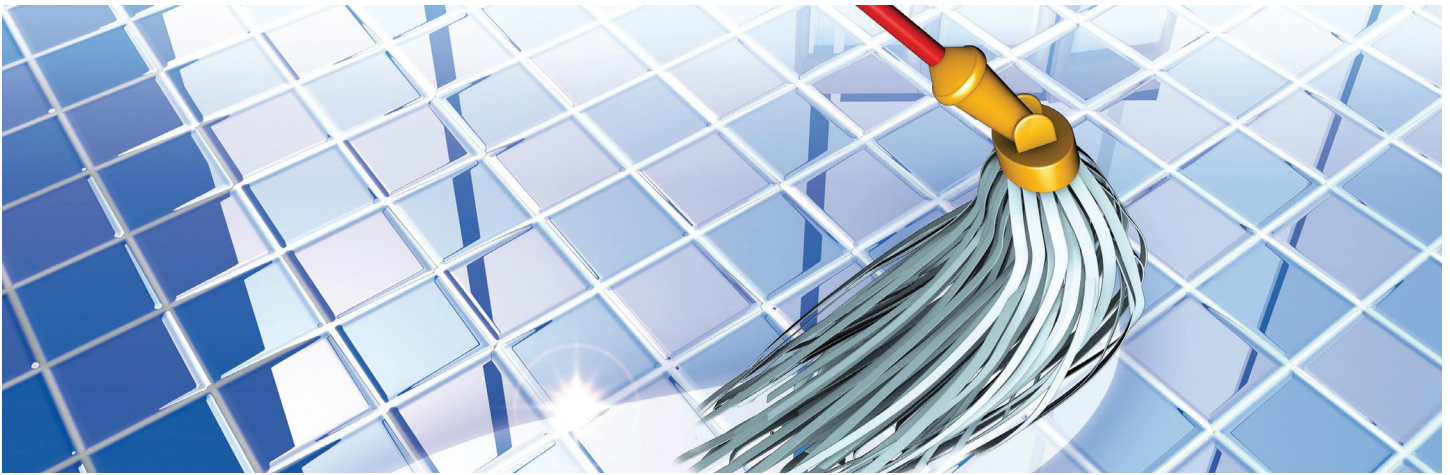
Reading #	Date	Time	Building	Space Type	Floor	Room	Component	Side	Substrate	Color	Condition	Lead Concentration (mg/cm2)	Result
42	9/8/2021	13:36:23	CSB	College	Penthouse	MER	Base		Metal	Black	Fair	0.5	Negative
43	9/8/2021	14:02:19	CSB	College	Basement	Hallway	Wall		Sheetrock	Beige	Fair	0.1	Negative
44	9/8/2021	14:03:17	CSB	College	2nd Floor	Hallway	Wall		Sheetrock	Beige	Fair	0.1	Negative
45	9/8/2021	14:04:00	CSB	College	2nd Floor	Hallway	Door		Metal	Grey	Fair	0.1	Negative
46	9/8/2021	14:04:20	CSB	College	2nd Floor	Hallway	Door Case		Metal	Grey	Fair	0.1	Negative
47	9/8/2021	14:04:50	CSB	College	2nd Floor	Hallway	Ceiling		Sheetrock	White	Fair	-0.1	Negative
48	9/8/2021	14:05:25				Calibration						1.1	Positive
49	9/8/2021	14:05:56				Calibration						1.2	Positive
50	9/8/2021	14:06:20				Calibration						1.2	Positive
51	9/9/2021	7:27:19				Calibration						1.1	Positive
52	9/9/2021	7:27:41				Calibration						1.2	Positive
53	9/9/2021	7:28:03				Calibration						1.1	Positive
54	9/9/2021	7:29:30	LHB	College	Penthouse	MER	Wall		CMU	White	Fair	0.3	Negative
55	9/9/2021	7:30:16	LHB	College	Penthouse	MER	Door		Metal	Black	Fair	0.2	Negative
56	9/9/2021	7:30:35	LHB	College	Penthouse	MER	Door Case		Metal	Black	Fair	0.2	Negative
57	9/9/2021	7:31:05	LHB	College	Penthouse	MER	Base		Metal	Black	Fair	0.3	Negative
58	9/9/2021	7:31:38	LHB	College	Penthouse	MER	Motor		Metal	Black	Fair	0.5	Negative
59	9/9/2021	7:32:09	LHB	College	Penthouse	MER	Motor		Metal	Blue	Fair	0.2	Negative
60	9/9/2021	7:32:54	LHB	College	Penthouse	MER	Cabinet		Metal	Brown	Fair	0.2	Negative
61	9/9/2021	7:38:01	LHB	College	Concourse	Hallway	Wall		Sheetrock	White	Fair	0	Negative
62	9/9/2021	7:38:46	LHB	College	Concourse	Hallway	Door		Metal	Grey	Fair	0.6	Negative
63	9/9/2021	7:39:12	LHB	College	Concourse	Hallway	Door Case		Metal	Grey	Fair	0.3	Negative
64	9/9/2021	7:41:13	LHB	College	Concourse	elevator	Wall		Metal	Orange	Fair	0.5	Negative
65	9/9/2021	7:57:54	LHB	College	SB Floor	Hallway	Wall		CMU	Blue	Fair	0.1	Negative
66	9/9/2021	8:53:42	STL -East	College	1st Floor	MER	Wall		CMU	White	Fair	0.2	Negative
67	9/9/2021	8:54:12	STL -East	College	1st Floor	MER	Wall		Sheetrock	White	Fair	0.1	Negative
68	9/9/2021	8:54:47	STL -East	College	1st Floor	MER	Door		Metal	White	Fair	0	Negative
69	9/9/2021	8:55:08	STL -East	College	1st Floor	MER	Door Case		Metal	White	Fair	0.1	Negative
70	9/9/2021	8:56:54	STL -East	College	1st Floor	MER	Reservoir Tank		Metal	Blue	Fair	0	Negative
71	9/9/2021	9:13:12	STL -East	College	2nd Floor	Hallway	Wall		Sheetrock	Beige	Fair	-0.3	Negative
72	9/9/2021	9:13:57	STL -East	College	2nd Floor	Hallway	Door		Metal	Grey	Fair	0.2	Negative
73	9/9/2021	9:17:26	STL -East	College		Elevator Cab	Wall		Metal	Pink	Fair	0	Negative
74	9/9/2021	9:41:57	STL-West	College	Basement	MER	Door		Metal	White	Fair	0.2	Negative
75	9/9/2021	9:42:17	STL-West	College	Basement	MER	Door Case		Metal	White	Fair	0	Negative
76	9/9/2021	9:59:06	STL-West	College	Basement	elevator	Wall		Metal	Red	Fair	0.5	Negative
77	9/9/2021	9:59:45	STL-West	College	Basement	Hallway	Wall		Sheetrock	White	Fair	0	Negative
78	9/9/2021	10:00:20	STL-West	College	Basement	Hallway	Door Case		Metal	White	Fair	-0.2	Negative
79	9/9/2021	10:00:46	STL-West	College	Basement	Hallway	Door		Metal	Brown	Fair	0.1	Negative
80	9/9/2021	10:33:55	STL-Main	College	Penthouse	MER	Door		Metal	Brown	Fair	0.1	Negative
81	9/9/2021	10:34:14	STL-Main	College	Penthouse	MER	Door Case		Metal	Brown	Fair	0.6	Negative
82	9/9/2021	10:34:42	STL-Main	College	Penthouse	MER	Cabinet		Metal	Brown	Fair	0	Negative



Reading #	Date	Time	Building	Space Type	Floor	Room	Component	Side	Substrate	Color	Condition	Lead Concentration (mg/cm2)	Result
83	9/9/2021	10:35:53	STL-Main	College	Penthouse	MER	Motor		Metal	Blue	Fair	0.3	Negative
84	9/9/2021	10:36:23	STL-Main	College	Penthouse	MER	Motor		Metal	Grey	Fair	0.2	Negative
85	9/9/2021	10:37:13	STL-Main	College	Penthouse	MER	Base		Metal	Black	Fair	0.4	Negative
86	9/9/2021	10:37:52	STL-Main	College	Penthouse	MER	Floor		Concrete	Grey	Fair	0.2	Negative
87	9/9/2021	10:38:31	STL-Main	College	Penthouse	MER	Wall		CMU	White	Fair	0	Negative
88	9/9/2021	11:01:06	STL-Main	College	Ground	Library	Wall		Sheetrock	White	Fair	0	Negative
89	9/9/2021	11:02:10	STL-Main	College	Ground	Library	Door Case		Metal	White	Fair	0.4	Negative
90	9/9/2021	11:02:47	STL-Main	College	Ground	Library	Door		Metal	Brown	Fair	0.5	Negative
91	9/9/2021	11:07:55	STL-Main	College		Elevator Cab	Wall		Metal	Orange	Fair	0.4	Negative
92	9/9/2021	11:08:22				Calibration						1.1	Positive
93	9/9/2021	11:08:53				Calibration						1.2	Positive
94	9/9/2021	11:09:24				Calibration						1.1	Positive

APPENDIX E

SDS MATERIAL DATA PAPERWORK FOR NEW CONSTRUCTION



The beauty of tile is not only in the unlimited design and aesthetic possibilities, but also in its durability and overall ease of maintenance. With little more than a few simple steps and using the mildest of products, your tile will stand the test of time and look great for years to come.

INITIAL CLEANING AND MAINTENANCE

The tile contractor is responsible for the complete removal of grout, mortar, adhesives, and construction debris after the installation of the tiles. Grout manufacturers print detailed instructions for proper mixing, curing, and cleaning of grout on each container. It is always advised that these directions are strictly followed without deviation. In most cases, tiles can be cleaned successfully, by scrubbing the tiles with hot water and mild detergents. A thorough rinsing with warm water and subsequent removal of the dirty solution, completes the cleaning. If grout residue or other remnants still remain, a more aggressive approach should be utilized.

PROPER CARE DURING CONSTRUCTION

Tile products are considered finish materials and should not be installed until heavy construction is completed. Once all tile work is complete, a protective cover should be placed over the tiled surface. Acceptable products include kraft paper, masonite, cardboard, and plywood. Never use plastic or polyethylene membranes, as these adversely affect the curing process of the grout.

GLAZED WALL TILES

For routine cleaning, a periodic wipe down - using a cloth, towel, or sponge dampened with non-abrasive, mild cleaners is the best way to go. Due to the near impenetrable glazes on most glazed tiles, the presence of dirt, external chemicals, oil, food agents, and debris can be simply wiped off. Please note, this does not mean that glazed tiles are self-cleaning. Your company's operations and maintenance manual should still qualify the frequency of cleaning.

GLASS TILES

For routine cleaning, use only neutral non-abrasive cleaning products. In most cases, standard glass cleaners are safe and effective. The use of detergents and abrasive cleaning agents may cause surface damage that may be irreversible. An untreated paper towel or micro-fiber cloth yields best results during cleaning.



POLISHED PORCELAIN TILES (ROUTINE CLEANING)

- Sweep or vacuum the floor of all loose dirt and other foreign materials.
- Polished surfaces require less detergents and cleaning agents. Mop the area with a mild, neutral cleaning solution.
- Once complete, rinse the entire area with clean, warm water.
- For best results, drying with a dry soft pad or cloth will increase the surface shine, and further help to prevent water stains.

**Polished porcelain should receive a penetrating sealer to protect the surface. Consult with the sealer manufacturer for frequency of application.*

UNPOLISHED PORCELAIN TILES AND QUARRY TILES (ROUTINE CLEANING)

- Sweep or vacuum the floor of all loose dirt and other foreign materials.
- Saturate the floor with a mild, neutral cleaning solution. For best results, use hot water, and allow the solution to dwell per the manufacturer's recommendations.
- Using a floor scrubbing machine (equipped with a nylon pad) or a deck brush with stiff bristles to scrub and agitate the surface.
- Rinse the dirty cleaning solution and rinse the surface with clean warm water.
- Buff with a dry mop or towel.

BEST PRACTICES

- Clean up spills and surface contaminants as quickly as possible. This mindful approach helps to eliminate stains and makes routine cleaning much easier.
- Less is more. Top coating finishes and sealers are generally not required, and in most cases are not recommended due to the low absorptive nature of our tile products.
- Don't ignore the grout. This is part of the tiled system and should not be neglected. In most cases, cleaning the joints in the same manner and frequency of your tile will work just fine.

ALWAYS REMEMBER TO NEVER...

- Use cleansers containing harsh acids such as muriatic or 100% phosphoric varieties for routine maintenance. These chemicals can be harmful to the tiles, grout, and setting materials.
- Use wax cleaners, oil-based detergents or sealants to maintain your tile (sealants may be used on grout joints and natural stone).
- Use ammonia or cleaners that contain bleach or acid. These products can adversely affect the color and stability of the grout system.
- Use steel wool pads or scouring pads or any other harsh cleaning agents containing metal.

PLACID



DESCRIPTION

The ever-desired hex mosaic is here in a subtly bold way. Not only does Placid offer a glossy and matte finish, but it has the best of both worlds with a mix of fabric, glossy and matte to create even more interest. The Scandinavian inspired colors of lemon white, pink cherry, mute deep teal green, ocean blue, and true black ensure Placid is a welcomed addition to any design.

COLORS



AVAILABLE SIZES

12"x12" sheet (1.7"x1.5" Hex) | Matte and Mix colors
6"x7" sheet (1.7"x1.5" Hex) | Glossy colors

WALL COLORS



FINISHES

Matte, Glossy (for wall only)

THICKNESS

4mm, 10mm

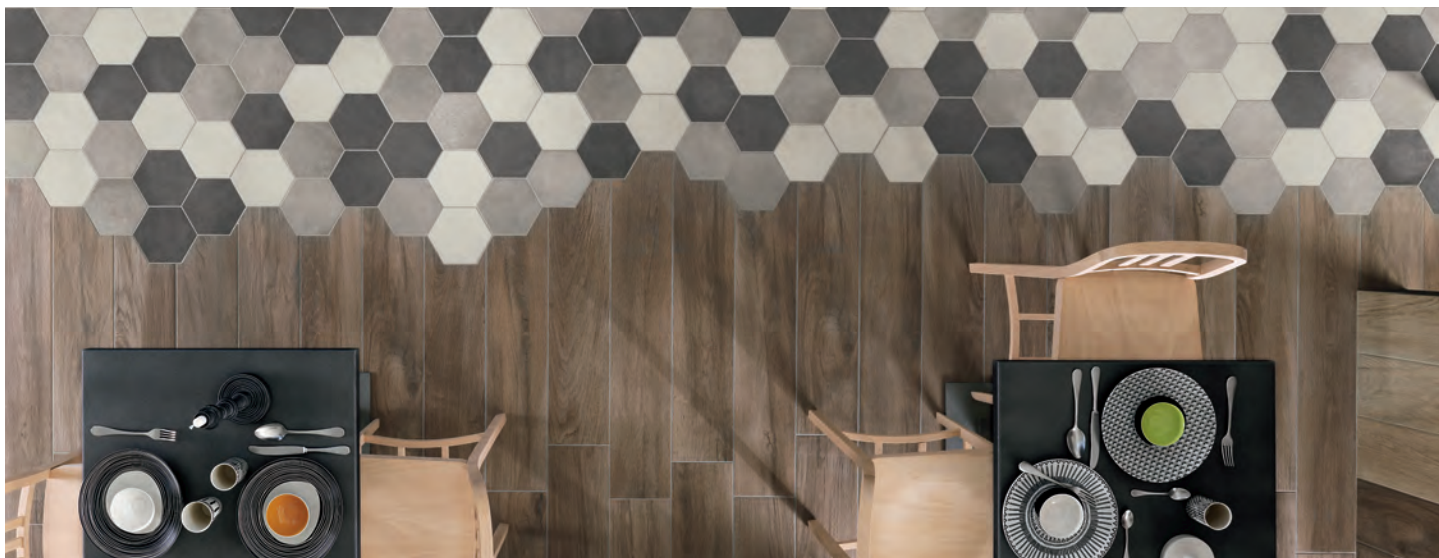
TECHNICAL DATA*

Specification Reference	Test Method	Test Result
DCOF	DCOF Acu Test	≥ 0.42
Water Absorption	EN ISO 10545-3	≤ .05%
Breaking Strength	ISO 10545-4	≥ 175
Scratch Hardness	MOHS	8

*All technical data was supplied by the manufacturer and is being provided by CMC for informational purposes only. Exact test results should be requested from your CMC contact.



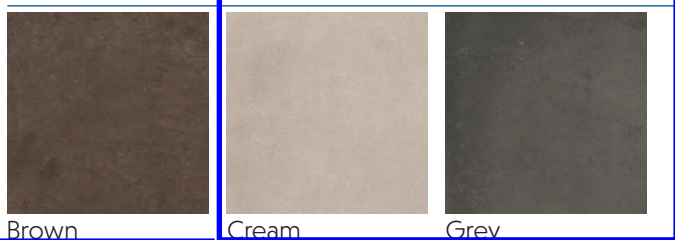
ROUNABOUT



DESCRIPTION

Roundabout is a modern take on the look of ancient cotto. Available in eclectic hexagon and large format sizes, this collection allows you to create a truly unique design.

COLORS



Brown

Cream

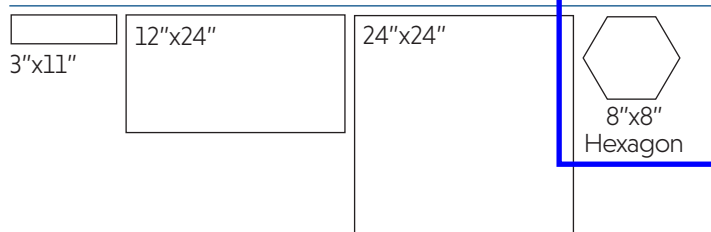
Grey



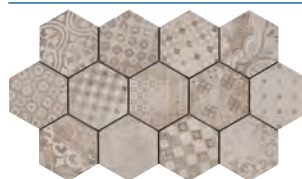
Light Grey

White

AVAILABLE SIZES



DECOR



8"x8" Hex Decor

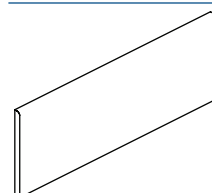
FINISHES

Natural

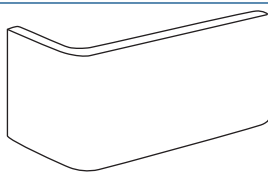
THICKNESS

9.5mm

TRIM



Bullnose 3"x24"

L Shaped Corner Piece
3"x7"x4"

TECHNICAL DATA*

Specification Reference	Test Method	Test Result
Water Absorption	ASTM-C373	≤ 0.50%
Breaking Strength	ASTM-C648	>275 lbs
DCOF	ANSI A137.1	≥ 0.42
Scratch Hardness	MOHS	8
Abrasion Resistance	ASTM-C1027	IV

*All technical data was supplied by the manufacturer and is being provided by CMC for informational purposes only. Exact test results should be requested from your CMC contact.





DESCRIPTION

Slide brings a fresh feel to classic ceramic wall tiles. The color palette offers bold and sought-after hues and subtle shadings add dimension to designs.

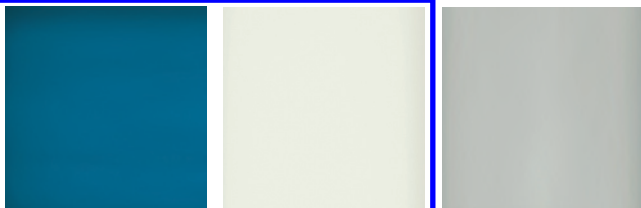
COLORS



Sand

Emerald

Caramel



Ocean

White

Grey



Mink

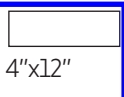
FINISHES

Glossy

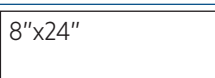
THICKNESS

7mm

AVAILABLE SIZES

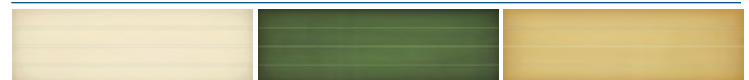


4"x12"



8"x24"

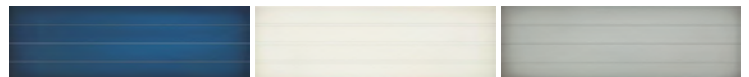
DECOR | 8"x24"



Sand Form

Emerald Form

Caramel Form



Ocean Form

White Form

Grey Form



Mink Form

Sand Move

Emerald Move



Caramel Move

Ocean Move

White Move



Grey Move

Mink Move

TECHNICAL DATA*

Specification Reference	Test Method	Test Result
Water Absorption	ISO 10545-3	≤ 16%
Breaking Strength	ISO 10545-4	≥ 22N/mm ²
DCOF	ANSI A137.1	≥ 0.42

*All technical data was supplied by the manufacturer and is being provided by CMC for informational purposes only. Exact test results should be requested from your CMC contact.



Post-Consumer

GROUT SOLUTIONS

 **FUSION PRO**[®]
SINGLE COMPONENT[®] GROUT

CEG[™]

prism

POLYBLEND

NEW
40 Colors
Available
In All
Grouts



CUSTOM[®]

TILE INSTALLATION SYSTEMS

Grout Colors for Tile and Stone. CUSTOM offers you the best color choices!

#381 Bright White

#11 Snow White

#10 Antique White

#333 Alabaster

#382 Bone

#122 Linen

#101 Quartz

#172 Urban Putty

#380 Haystack

#180 Sandstone

#135 Mushroom



#145 Light Smoke

#186 Khaki

#156 Fawn

#22 Sahara Tan

#45 Summer Wheat

#105 Earth

#50 Nutmeg

#541 Walnut

#183 Chateau

#185 New Taupe

#59 Saddle Brown

#52 Tobacco Brown

#95 Sable Brown



#540 Truffle



#548 Surf Green



#547 Ice Blue



#115 Platinum



#544 Rolling Fog



#545 Bleached Wood



#386 Oyster Gray



#546 Cape Gray



#165 Delorean Gray



#543 Driftwood



#542 Graystone



#09 Natural Gray



#335 Winter Gray

#19 Pewter

#370 Dove Gray

#60 Charcoal

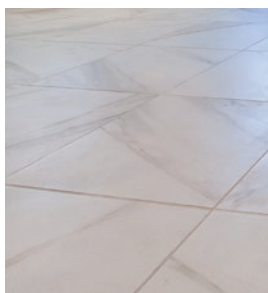
All colors available in all grout types.

Sample colors shown generally approximate the color of the grout. Final installed color may vary.

Color Selection Tips

Complementary

Pick a grout color similar to your tile color to create a uniform look to your floor.



Contrast

When a contrasting grout color is used, your tile grout lines stand out highlighting tile shapes and patterns creating a checkerboard effect.



Use a qualifying system of eligible surface prep and tile setting products from CUSTOM and we'll warrant the entire tile installation for life, including materials, tile and labor to repair in the event of a defect. See CustomBuildingProducts.com for more details.

STAIN PROOF*
AND
COLOR PERFECT*



Fusion Pro® Single Component® Grout

*Fusion Pro will not effloresce, mottle, fade or color shade within the grout joint when installed per manufacturer's directions. Cured Fusion Pro will not stain when exposed to most common, non-corrosive household goods and cleaning agents. All spills should be immediately cleaned from the grout. See website for details.

Coverage

Fusion Pro® Single Component® Grout

Square Feet per 1 Gallon Unit / M² per 3.78 L



TILE SIZE	JOINT WIDTH					
	1/16" (1.6 mm)	1/8" (3 mm)	3/16" (4.8 mm)	1/4" (6 mm)	3/8" (9.5 mm)	1/2" (13 mm)
1" x 1" x 1/4"	55	31	23	19	15	14
25 x 25 x 6 mm	5.1	2.9	2.1	1.8	1.4	1.3
4-1/4" x 4-1/4" x 1/4"	213	110	75	58	41	32
108 x 108 x 6 mm	19.8	10.2	7.0	5.4	3.8	3.0
12" x 12" x 3/8"	393	199	134	101	69	53
300 x 300 x 9.5 mm	36.5	18.5	12.4	9.4	6.4	4.9
18" x 18" x 3/8"	588	296	199	150	101	77
450 x 450 x 9.5 mm	54.6	27.5	18.5	13.9	9.4	7.2
6" x 24" x 3/8"	315	160	108	82	56	43
150 x 600 x 9.5 mm	29.3	18.7	10.0	7.6	5.2	4.0
12" x 24" x 3/8"	523	263	177	134	91	69
300 x 600 x 9.5 mm	48.6	24.4	16.4	12.4	8.5	6.4

CEG-Lite™ Commercial 100% Solids Epoxy Grout

Square Feet / M² per Combined 1 Part A + 1 Part B (9.5 lb./4.3 kg)

Coverage for larger size CEG-Lite (19 lb./8.6 kg) is double the values below. See our website for chart and details.

CEG-Lite™

TILE SIZE	JOINT WIDTH					
	1/16" (1.6 mm)	1/8" (3 mm)	3/16" (4.8 mm)	1/4" (6 mm)	3/8" (9.5 mm)	1/2" (13 mm)
1" x 1" x 1/4"	52	29	21	18	14	13
25 x 25 x 6 mm	4.8	2.7	1.9	1.7	1.3	1.2
4-1/4" x 4-1/4" x 1/4"	200	103	71	54	38	30
108 x 108 x 6 mm	18.6	9.6	6.6	5.0	3.5	2.8
12" x 12" x 3/8"	369	187	126	95	65	50
300 x 300 x 9.5 mm	34.3	17.4	11.7	8.8	6.0	4.6
18" x 18" x 3/8"	552	278	187	141	95	72
450 x 450 x 9.5 mm	51.3	25.8	17.4	13.1	8.8	6.7
6" x 24" x 3/8"	296	150	101	77	53	40
150 x 600 x 9.5 mm	27.5	13.9	9.4	7.1	4.9	3.7
12" x 24" x 3/8"	491	248	166	126	85	65
300 x 600 x 9.5 mm	45.6	23.0	15.4	11.7	7.9	6.0

CEG-IG™ Industrial Grade 100% Solids Epoxy Grout

Square Feet / M² per Unit of Grout (2 Part A + 1 Part B)

TILE SIZE	JOINT WIDTH					
	1/16" (1.6 mm)	1/8" (3 mm)	3/16" (4.8 mm)	1/4" (6 mm)	3/8" (9.5 mm)	1/2" (13 mm)
1" x 1" x 1/4"	103	58	43	36	29	26
25 x 25 x 6 mm	9.6	5.4	4.0	3.3	2.7	2.4
4-1/4" x 4-1/4" x 1/4"	400	206	141	109	77	61
108 x 108 x 6 mm	37.2	19.1	13.1	10.1	7.1	5.7
12" x 12" x 3/8"	739	373	251	191	130	99
300 x 300 x 9.5 mm	68.6	34.6	23.3	17.7	12.1	9.2
18" x 18" x 3/8"	1104	556	373	282	191	145
450 x 450 x 9.5 mm	102.6	51.6	34.6	26.2	17.7	13.5
6" x 24" x 3/8"	593	300	203	154	105	81
150 x 600 x 9.5 mm	55.1	27.9	18.9	14.3	9.7	7.5
12" x 24" x 3/8"	983	495	333	251	170	130
300 x 600 x 9.5 mm	91.3	46.0	30.9	23.3	15.8	12.1



Prism® Color Consistent Grout

Square Feet / M² per Unit of Grout (1 Package)

Can be used with 1/16" to 1/2" joints.

See website for details.



Polyblend® Sanded Grout

Square Feet per 25 lb. / M² per 11.34 kg



TILE SIZE	JOINT WIDTH				
	1/8" (3 mm)	3/16" (4.8 mm)	1/4" (6 mm)	3/8" (9.5 mm)	1/2" (13 mm)
1" x 1" x 1/4"	54	40	33	27	24
25 x 25 x 6 mm	5.0	3.7	3.1	2.5	2.2
4-1/4" x 4-1/4" x 1/4"	192	131	101	71	56
108 x 108 x 6 mm	17.8	12.2	9.4	6.6	5.2
12" x 12" x 3/8"	348	234	177	121	92
300 x 300 x 9.5 mm	32.3	21.7	16.4	11.2	8.5
18" x 18" x 3/8"	518	348	262	177	135
450 x 450 x 9.5 mm	48.1	32.3	24.3	16.4	12.5
6" x 24" x 3/8"	279	189	143	98	75
150 x 600 x 9.5 mm	25.9	17.6	13.3	9.1	7.0
12" x 24" x 3/8"	461	310	234	158	121
300 x 600 x 9.5 mm	42.8	28.8	21.7	14.7	11.2

Polyblend® Non-Sanded Grout

Square Feet per 10 lb. / M² per 4.5 kg



TILE SIZE	JOINT WIDTH	
	1/16" (1.6 mm)	1/8" (3 mm)
1" x 1" x 1/4"	40	23
25 x 25 x 6 mm	3.7	2.1
4-1/4" x 4-1/4" x 1/4"	156	80
108 x 108 x 6 mm	14.5	7.4
12" x 12" x 3/8"	289	146
300 x 300 x 9.5 mm	26.8	13.6
18" x 18" x 3/8"	432	217
450 x 450 x 9.5 mm	40.1	20.2
6" x 24" x 3/8"	232	117
150 x 600 x 9.5 mm	21.5	10.9
12" x 24" x 3/8"	384	194
300 x 600 x 9.5 mm	35.7	18.0

Charts for estimating purposes. Coverage may vary based on installation practices and jobsite conditions. For more tile and joint sizes, use the material calculator at CustomBuildingProducts.com or contact CUSTOM Technical Services at 800-282-8786.

Custom Building Products is North America's leader in flooring preparation products and tile and stone installation systems for residential and commercial projects. When it comes to choosing a quality grout for your next project, trust the company with the right product, performance and color selection. We know grout. Count on CUSTOM.



FUSION PRO SINGLE COMPONENT™ GROUT

- Stain proof and color perfect*
- Unsurpassed stain resistance
- Never needs sealing
- Easy to spread and clean
- Ultimate color consistency

CEG-IG™

- Formulated for use in harsh environments
- High chemical, stain and temperature resistance
- Water cleanable
- Contains recycled materials which may contribute to LEED® points
- Exceeds ANSI A118.3

CEG-Lite™

- Chemical and stain resistant
- Lightweight formula packs tightly into joints
- Easy to work with — Uniform in color
- Contains recycled LEED® contributing materials
- Exceeds ANSI A118.3



- Color consistent
- No efflorescence
- Cures quickly, develops high early strengths
- Lightweight, excellent handling characteristics
- Exceeds ANSI A118.7



- Polymer fortified for hard, durable, professional results
- Available in Sanded and Non-Sanded
- Resistant to shrinking, cracking and wear
- Exceeds ANSI A118.6



- Suitable for expansion joints, wet and submerged areas
- Interior/Exterior
- Use with stone and tile
- Remains permanently flexible
- ASTM C920/C794 Compliant

CUSTOM may make product modifications at any time without notice. Product specifications are subject to change. Visit custombuildingproducts.com for updated technical data sheets and MSDS information.

800-272-8786 **custombuildingproducts.com**

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CC6 7/15R



CUSTOM®

TILE INSTALLATION SYSTEMS

Polyblend® Non-Sanded Grout

1 Product Name

Polyblend® Non-Sanded Grout

2 Manufacturer

Custom Building Products
 Technical Services
 10400 Pioneer Boulevard, Unit 3
 Santa Fe Springs, CA 90670
 Customer Support: 800-272-8786
 Technical Services: 800-282-8786
 Fax: 800- 200-7765
 Email: contactus@cbpmail.net
custombuildingproducts.com

3 Product Description

A polymer-modified, cement-based non-sanded grout designed for highly glazed or polished tile, marble and natural stone that would be scratched by sanded grouts. This durable, non-shrinking grout accommodates joints up to 1/8" (3 mm) and can be used for interior or exterior installations, including floors, countertops, walls, ceilings, showers, fountains and pools.

Key Features

- Easy to use - Just mix with water
- Polymer fortified for hard, durable, professional results

Uses

- Use to fill joint widths up to 1/8" (3.2 mm)
- May be used for both floor and wall installations
- Interior and exterior applications
- Residential and commercial applications
- Countertops, tub surrounds, showers and high traffic areas
- Submerged conditions (swimming pools, spas, water features and fountains)

Suitable Tile Types

- Vitreous, semi-vitreous or non-vitreous tile
- Impervious porcelain and glass tile
- Cement-based precast terrazzo
- Natural stone tile

Composition of Product

Polyblend® Non-Sanded Grout is a dry, Portland cement based grout, inorganic aggregates and chemicals.

Benefits of Product in the Installation

- Hard, dense grout joints
- Resists shrinking, cracking, powdering and wear
- Excellent for highly-glazed ceramic tile and highly-polished marble or natural stone



Limitations to the Product

- Should not be installed when ambient or surface temperature is lower than 50°F (10°C) or higher than 100°F (38°C).
- Tile or stone with high absorption, surfaces that are porous or rough, textured surfaces and some types of porcelain tile may require sealing prior to grouting to prevent possible staining. Use [Aqua Mix® Grout Release](#) or [TileLab® SurfaceGard® Sealer](#) to prevent staining when required.
- Color variation can occur due to tile type, tile porosity, jobsite conditions, application and cleaning techniques. Variation can be minimized by following directions and using as little water as possible for cleanup.
- Not for use in either industrial applications or in areas subjected to harsh or continuous chemicals, high heat or high-pressure cleaning. For heavy industrial tile installations, use [CEG-IG 100% Solids Epoxy Grout](#).
- Chemicals in salt-based pool filtration systems can cause a reaction with blue, green and red grouts. Contact Technical Services for recommendations.
- Not for use in movement joints or changes of plane in the tile installation. In these areas use an appropriate caulk or sealant such as [Commercial 100% Silicone Caulk](#) or [Polyblend® Ceramic Tile Caulk](#).

Packaging

Available in 3 sizes:

- 1 lb (.45 kg) tub
- 10 lb (4.5 kg) box
- 25 lb (11.34 kg) bag

Available in 48 standard colors; color matching is available. 1 lb grout is available in 2 colors.

4 Technical Data

Applicable Standards

American National Standards Institute (ANSI) ANSI A108.10 and A118.6 American National Standards for the Installation of Ceramic Tile ASTM International (ASTM)



Polyblend® Non-Sanded Grout

- ASTM C109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens)
- ASTM C531 Standard Test Method for Linear Shrinkage
- ASTM C580 Standard Test method for Flexural Strength

Approvals

Polyblend® Non-Sanded Grout exceeds ANSI A118.6 standards.

Technical Chart

Property	Test Method	Requirement	Typical Results
Pot Life			1-2 hours
Shrinkage	A118.6 Section 4.3	< 0.30%	<0.10%
Water Absorption	A118.6 Section 4.4	< 18%	<16%
28 Day Compressive Strength	A118.6 Section 4.5	> 3000 psi	3300 psi (232 kg/cm sq.)
Tensile Strength	A118.6 Section 4.6	> 250 psi	525 psi (36.9 kg/cm sq.)
Flexural Strength	A118.6 Section 4.7	>500 psi	>790 psi (>55.6 kg/cm sq.)

Environmental Consideration

Custom® Building Products is committed to environmental responsibility in both products produced and in manufacturing practices. Use of this product can contribute towards LEED® v3 certification:

- Up to 2 points towards MR Credit 5, Regional Materials
- Up to 1 point towards IEQ Credit 4.1, Low-Emitting Materials – Adhesives & Sealants

5 Instructions

General Surface Prep

USE CHEMICAL-RESISTANT GLOVES, such as nitrile, when handling product.

Tile or stone must be firmly bonded to a sound substrate, and setting material must be cured a minimum 24-48 hours before cement grout is applied, unless rapid-setting mortars are used. See the corresponding data sheet for the bonding mortars used in your application. Remove spacers and ensure that the grout joints are uniform in depth and width and free of loose debris, contaminants and excess mortar. Use [TileLab® SurfaceGard® Sealer](#) or [Aqua Mix® Grout Release](#) to seal tile or stone subject to staining or when using a grout that contrasts with the color of the tile.

Mixing Ratios

- Mix 3 pt (1.4 L) clean water to 10 lb (4.5 kg) grout.
- Mix 7.5 pt (3.5 L) clean water to 25 lb (11.34 kg) grout.
- For 1 lb (.45 kg) grout, see package for fill line indicator.

Mixing Procedures

When installing more than 1 container of grout at a time, blend dry powders prior to mixing with water. Mix with a trowel or low speed mixer (less than 300 rpm) to achieve a smooth, lump-free consistency. Let the mixture stand (slake) for 10 minutes, and then remix and use. Periodically remix to keep the mixture workable, but do not add water, which can weaken the grout, cause color variation and possible cause shrinkage, cracks and pinholes. Discard grout when it becomes too stiff to work.

Application of Product

Installation must conform to ANSI A108.10. Lightly dampen absorptive, highly porous tile with clean, cool water, but leave no standing water in the joints. Holding a rubber grout float at a 45° angle, completely fill the joints. Holding the edge of the float at a 90° angle, remove excess grout. At 70° F, do not spread more grout than can be cleaned within 30 minutes of the grout firming and use as little water as possible for grout clean-up (higher temperatures may shorten this time frame). Using a damp, small pore grout sponge in a circular motion, smooth and level joints and remove excess grout. Change the water and rinse the sponge frequently. Haze can be removed after 3 hours with cheesecloth or wrung-out sponge. If haze persists, the installation can be washed after three days with [Aqua Mix NanoScrub](#) or after ten days with [Aqua Mix® Sulfamic Acid Crystals](#), [TileLab® Sulfamic Acid Cleaner](#) or [Aqua Mix® Cement Grout Haze Remover](#). Perform a test in an inconspicuous area prior to complete application. Movement joints are required for perimeters and other changes of plane in all installations. See TCNA Detail EJ171 for recommendations.

Curing of Product

Curing time is affected by ambient and surface temperatures and humidity. For exterior applications, it is recommended that the installation is misted periodically with clean, cool water for 3 days.

Exterior applications must be protected from rain, snow and other wet conditions for at least 7 days with temperature above 50° F (10° C). If inclement weather is expected, protect the work area with tenting at least 1 foot (30 cm) above the finished surface to allow air flow. Enclose and protect exterior installations and maintain >50° F (10° C) temperatures for at least 72 hours for proper cure.

Sealing of Grout

Use a pH-neutral, water-based sealer such as [TileLab® SurfaceGuard®](#) or [Aqua Mix® Sealer's Choice® Gold](#).

Cleaning of equipment

Clean tools and hands with water before the material dries.

Health Precautions

This product contains Portland cement. Avoid eye contact or prolonged contact with skin. Wash thoroughly after handling. If eye contact occurs, flush with water for 15 minutes and consult a physician. Use with adequate ventilation; do not breathe dust and wear a NIOSH approved respirator. If ingested, do not induce vomiting; call a physician immediately.



CUSTOM®

Polyblend® Non-Sanded Grout

Conformance to Building Codes

Installation must comply with the requirements of all applicable local, state and federal code jurisdictions.



CUSTOM®

Polyblend® Non-Sanded Grout

6 Availability & Cost

Location	Grout Color	Item Code	Size	Package	Item Code	Size	Package
USA	#9 Natural Gray	PBG0910	10 lb (4.5 kg)	Box	NSG0925*	25 lb (11.34 kg)	Bag
USA	#10 Antique White	PBG1010	10 lb (4.5 kg)	Box	NSG1025**	25 lb (11.34 kg)	Bag
USA	#11 Snow White	PBG1110	10 lb (4.5 kg)	Box	NSG1125**	25 lb (11.34 kg)	Bag
USA	#19 Pewter	PBG1910	10 lb (4.5 kg)	Box	NSG1925*	25 lb (11.34 kg)	Bag
USA	#22 Sahara Tan	PBG2210	10 lb (4.5 kg)	Box	NSG2225*	25 lb (11.34 kg)	Bag
USA	#45 Summer Wheat	PBG4510	10 lb (4.5 kg)	Box	NSG4525*	25 lb (11.34 kg)	Bag
USA	#50 Nutmeg	PBG5010	10 lb (4.5 kg)	Box	NSG5025*	25 lb (11.34 kg)	Bag
USA	#52 Tobacco Brown	PBG5210	10 lb (4.5 kg)	Box	NSG5225*	25 lb (11.34 kg)	Bag
USA	#59 Saddle Brown	PBG5910	10 lb (4.5 kg)	Box	NSG5925*	25 lb (11.34 kg)	Bag
USA	#60 Charcoal	PBG6010	10 lb (4.5 kg)	Box	NSG6025*	25 lb (11.34 kg)	Bag
USA	#95 Sable Brown	PBG9510	10 lb (4.5 kg)	Box	NSG9525*	25 lb (11.34 kg)	Bag
USA	#101 Quartz	PBG10110	10 lb (4.5 kg)	Box	NSG10125*	25 lb (11.34 kg)	Bag
USA	#105 Earth	PBG10510	10 lb (4.5 kg)	Box	NSG10525*	25 lb (11.34 kg)	Bag
USA	#115 Platinum	PBG11510	10 lb (4.5 kg)	Box	NSG11525*	25 lb (11.34 kg)	Bag
USA	#122 Linen	PBG12210	10 lb (4.5 kg)	Box	NSG12225***	25 lb (11.34 kg)	Bag
USA	#135 Mushroom	PBG13510	10 lb (4.5 kg)	Box	NSG13525*	25 lb (11.34 kg)	Bag
USA	#145 Light Smoke	PBG14510	10 lb (4.5 kg)	Box	NSG14525*	25 lb (11.34 kg)	Bag
USA	#156 Fawn	PBG15610	10 lb (4.5 kg)	Box	NSG15625*	25 lb (11.34 kg)	Bag
USA	#165 Delorean Gray	PBG16510	10 lb (4.5 kg)	Box	NSG16525***	25 lb (11.34 kg)	Bag
USA	#172 Urban Putty	PBG17210	10 lb (4.5 kg)	Box	NSG17225*	25 lb (11.34 kg)	Bag
USA	#180 Sandstone	PBG18010	10 lb (4.5 kg)	Box	NSG18025*	25 lb (11.34 kg)	Bag
USA	#183 Chateau	PBG18310	10 lb (4.5 kg)	Box	NSG18325*	25 lb (11.34 kg)	Bag
USA	#185 New Taupe	PBG18510	10 lb (4.5 kg)	Box	NSG18525*	25 lb (11.34 kg)	Bag
USA	#186 Khaki	PBG18610	10 lb (4.5 kg)	Box	NSG18625*	25 lb (11.34 kg)	Bag
USA	#333 Alabaster	PBG33310	10 lb (4.5 kg)	Box	NSG33325*	25 lb (11.34 kg)	Bag
USA	#335 Winter Gray	PBG33510	10 lb (4.5 kg)	Box	NSG33525***	25 lb (11.34 kg)	Bag
USA	#370 Dove Gray	PBG37010	10 lb (4.5 kg)	Box	NSG37025*	25 lb (11.34 kg)	Bag
USA	#380 Haystack	PBG38010	10 lb (4.5 kg)	Box	NSG38025***	25 lb (11.34 kg)	Bag
USA	#381 Bright White	PBG38110	10 lb (4.5 kg)	Box	NSG38125**	25 lb (11.34 kg)	Bag
USA	#382 Bone	PBG38210	10 lb (4.5 kg)	Box	NSG38225**	25 lb (11.34 kg)	Bag
USA	#386 Oyster Gray	PBG38610	10 lb (4.5 kg)	Box	NSG38625*	25 lb (11.34 kg)	Bag
USA	#540 Truffle	PBG54010	10 lb (4.5 kg)	Box	NSG54025*	25 lb (11.34 kg)	Bag
USA	#541 Walnut	PBG54110	10 lb (4.5 kg)	Box	NSG54125*	25 lb (11.34 kg)	Bag
USA	#542 Graystone	PBG54210	10 lb (4.5 kg)	Box	NSG54225*	25 lb (11.34 kg)	Bag
USA	#543 Driftwood	PBG54310	10 lb (4.5 kg)	Box	NSG54325*	25 lb (11.34 kg)	Bag
USA	#544 Rolling Fog	PBG54410	10 lb (4.5 kg)	Box	NSG54425*	25 lb (11.34 kg)	Bag
USA	#545 Bleached Wood	PBG54510	10 lb (4.5 kg)	Box	PBG54525*	25 lb (11.34 kg)	Bag
USA	#546 Cape Gray	PBG54610	8 lb (3.17 kg)	Box	NSG54625*	26 lb (11.34 kg)	Bag
USA	#547 Ice Blue	PBG54710	9 lb (3.17 kg)	Box	NSG54725*	27 lb (11.34 kg)	Bag
USA	#548 Surf Green	PBG54810	10 lb (3.17 kg)	Box	NSG54825*	28 lb (11.34 kg)	Bag


CUSTOM®

Polyblend® Non-Sanded Grout

Location	Grout Color	Item Code	Size	Package	Item Code	Size	Package
Canada	#9 Natural Gray	CPBG0910N	10 lb (4.5 kg)	Box	CNSG0925N	25 lb (11.34 kg)	Bag
Canada	#10 Antique White	CPBG1010N	10 lb (4.5 kg)	Box	CNSG1025N	25 lb (11.34 kg)	Bag
Canada	#11 Snow White	CPBG1110N	10 lb (4.5 kg)	Box	CNSG1125N*	25 lb (11.34 kg)	Bag
Canada	#19 Pewter	CPBG1910N	10 lb (4.5 kg)	Box	CNSG1925N*	25 lb (11.34 kg)	Bag
Canada	#22 Sahara Tan	CPBG2210N	10 lb (4.5 kg)	Box	CNSG2225N	25 lb (11.34 kg)	Bag
Canada	#45 Summer Wheat	CPBG4510N	10 lb (4.5 kg)	Box	CNSG4525N*	25 lb (11.34 kg)	Bag
Canada	#50 Nutmeg	CPBG5010N	10 lb (4.5 kg)	Box	CNSG5025N*	25 lb (11.34 kg)	Bag
Canada	#52 Tobacco Brown	CPBG5210N	10 lb (4.5 kg)	Box	CNSG5225N*	25 lb (11.34 kg)	Bag
Canada	#59 Saddle Brown	CPBG5910N	10 lb (4.5 kg)	Box	CNSG5925N*	25 lb (11.34 kg)	Bag
Canada	#60 Charcoal	CPBG6010N	10 lb (4.5 kg)	Box	CNSG6025N	25 lb (11.34 kg)	Bag
Canada	#95 Sable Brown	CPBG9510N	10 lb (4.5 kg)	Box	CNSG9525N*	25 lb (11.34 kg)	Bag
Canada	#101 Quartz	CPBG10110N	10 lb (4.5 kg)	Box	CNSG10125N*	25 lb (11.34 kg)	Bag
Canada	#105 Earth	CPBG10510N	10 lb (4.5 kg)	Box	CNSG10525N*	25 lb (11.34 kg)	Bag
Canada	#115 Platinum	CPBG11510N	10 lb (4.5 kg)	Box	CNSG11525N*	25 lb (11.34 kg)	Bag
Canada	#122 Linen	CPBG12210N	10 lb (4.5 kg)	Box	CNSG12225N	25 lb (11.34 kg)	Bag
Canada	#135 Mushroom	CPBG13510N	10 lb (4.5 kg)	Box	CNSG13525N*	25 lb (11.34 kg)	Bag
Canada	#145 Light Smoke	CPBG14510N	10 lb (4.5 kg)	Box	CNSG14525N	25 lb (11.34 kg)	Bag
Canada	#156 Fawn	CPBG15610N	10 lb (4.5 kg)	Box	CNSG15625N*	25 lb (11.34 kg)	Bag
Canada	#165 Delorean Gray	CPBG16510N	10 lb (4.5 kg)	Box	CNSG16525N	25 lb (11.34 kg)	Bag
Canada	#172 Urban Putty	CPBG17210N	10 lb (4.5 kg)	Box	CNSG17225N*	25 lb (11.34 kg)	Bag
Canada	#180 Sandstone	CPBG18010N	10 lb (4.5 kg)	Box	CNSG18025N	25 lb (11.34 kg)	Bag
Canada	#183 Chateau	CPBG18310N	10 lb (4.5 kg)	Box	CNSG18325N*	25 lb (11.34 kg)	Bag
Canada	#185 New Taupe	CPBG18510N	10 lb (4.5 kg)	Box	CNSG18525N*	25 lb (11.34 kg)	Bag
Canada	#186 Khaki	CPBG18610N	10 lb (4.5 kg)	Box	CNSG18625N*	25 lb (11.34 kg)	Bag
Canada	#333 Alabaster	CPBG33310N	10 lb (4.5 kg)	Box	CNSG33325N*	25 lb (11.34 kg)	Bag
Canada	#335 Winter Gray	CPBG33510N	10 lb (4.5 kg)	Box	CNSG33525N*	25 lb (11.34 kg)	Bag
Canada	#370 Dove Gray	CPBG37010N	10 lb (4.5 kg)	Box	CNSG37025N*	25 lb (11.34 kg)	Bag
Canada	#380 Haystack	CPBG38010N	10 lb (4.5 kg)	Box	CNSG38025N	25 lb (11.34 kg)	Bag
Canada	#381 Bright White	CPBG38110N	10 lb (4.5 kg)	Box	CNSG38125N	25 lb (11.34 kg)	Bag
Canada	#382 Bone	CPBG38210N	10 lb (4.5 kg)	Box	CNSG38225N	25 lb (11.34 kg)	Bag
Canada	#386 Oyster Gray	CPBG38610N	10 lb (4.5 kg)	Box	CNSG38625N	25 lb (11.34 kg)	Bag
Canada	#540 Truffle	CPBG54010N	10 lb (4.5 kg)	Box	CNSG54025N*	25 lb (11.34 kg)	Bag
Canada	#541 Walnut	CPBG54110N	10 lb (4.5 kg)	Box	CNSG54125N*	25 lb (11.34 kg)	Bag
Canada	#542 Graystone	CPBG54210N	10 lb (4.5 kg)	Box	CNSG54225N*	25 lb (11.34 kg)	Bag
Canada	#543 Driftwood	CPBG54310N	10 lb (4.5 kg)	Box	CNSG54325N*	25 lb (11.34 kg)	Bag
Canada	#544 Rolling Fog	CPBG54410N	10 lb (4.5 kg)	Box	CNSG54425N*	25 lb (11.34 kg)	Bag
Canada	#545 Bleached Wood	CPBG54510N	10 lb (4.5 kg)	Box	CPBG54525N*	25 lb (11.34 kg)	Bag
Canada	#546 Cape Gray	CPBG54610N	8 lb (3.17 kg)	Box	CNSG54625N*	26 lb (11.34 kg)	Bag
Canada	#547 Ice Blue	CPBG54710N	9 lb (3.17 kg)	Box	CNSG54725N*	27 lb (11.34 kg)	Bag
Canada	#548 Surf Green	CPBG54810N	10 lb (3.17 kg)	Box	CNSG54825N*	28 lb (11.34 kg)	Bag

Location	Grout Color	Item Code	Size	Package
USA	#122 Linen	NSG1221-4	1 lb (.45 kg)	Tub
USA	#381 Bright White	NSG3811-4	1 lb (.45 kg)	Tub

* Indicates special order item.

** Available from Georgia, Indiana and New Jersey plants only.

*** Available from Georgia plant only.



CUSTOM®

Polyblend® Non-Sanded Grout

See our color card for truest color representation when selecting or specifying a grout color. Final installed shade may vary with the tile type, color and porosity as well as jobsite conditions and finishing techniques. For best results, perform a test on a small, inconspicuous area or create a sample board prior to installation.

7 Product Warranty

Obtain the applicable **LIMITED PRODUCT WARRANTY** at www.custombuildingproducts.com/product-warranty or send a written request to Custom Building Products, Inc., Five Concourse Parkway, Atlanta, GA 30328, USA. Manufactured under the authority of Custom Building Products, Inc. © 2017 Quikrete International, Inc.

8 Product Maintenance

Clean with a pH-neutral cleaner such as [Aqua Mix AquaKleen](#), [Aqua Mix Concentrated Tile & Stone Cleaner](#) or [TileLab Grout & Tile Cleaner](#).

9 Technical Services Information

For technical assistance, contact Custom® technical services at 800-272-8786 or visit custombuildingproducts.com.

10 Filing System

Additional product information is available from the manufacturer upon request.

Related Products

Polyblend® Ceramic Tile Caulk

Commercial 100% Silicone Sealant

TileLab® SurfaceGard® Sealer

StainBlocker for Grout

Polyblend® Sanded Grout



Polyblend® Non-Sanded Grout

Coverage

For 10 lb. box of Polyblend Non-sanded in ft² (m²) per bag

Tile Size	Joint Width	
	1/16" (1.63 mm)	1/8" (3 mm)
Width x Length x Thickness		
1" x 1" x 1/4" (2.5 x 2.5 x .64 cm)	40 ft ² (3.7 m ²)	23 ft ² (2.1 m ²)
2" x 2" x 1/4" (5 x 5 x .64 cm)	76 ft ² (7.1 m ²)	40 ft ² (3.7 m ²)
3" x 3" x 1/4" (7.6 x 7.6 x .64 cm)	112 ft ² (10.4 m ²)	58 ft ² (5.4 m ²)
4.25" x 4.25" x 1/4" (10.8 x 10.8 x .64 cm)	156 ft ² (14.5 m ²)	80 ft ² (7.5 m ²)
6" x 6" x 1/4" (15.2 x 15.2 x .64 cm)	219 ft ² (20.3 m ²)	112 ft ² (10.4 m ²)
8" x 8" x 3/8" (20.3 x 20.3 x 1 cm)	194 ft ² (18 m ²)	98 ft ² (9.1 m ²)
12" x 12" x 3/8" (30.5 x 30.5 x 1 cm)	289 ft ² (26.8 m ²)	146 ft ² (13.6 m ²)
18" x 18" x 3/8" (45.7 x 45.7 x 1 cm)	432 ft ² (40.1 m ²)	217 ft ² (20.2 m ²)
20" x 20" x 3/8" (50.8 x 50.8 x 1 cm)	480 ft ² (44.6 m ²)	241 ft ² (22.4 m ²)
24" x 24" x 3/8" (61 x 61 x 1 cm)	575 ft ² (53.4 m ²)	289 ft ² (26.8 m ²)
6" x 24" x 3/8" (15.2 x 61 x 1 cm)	232 ft ² (15.2 m ²)	117 ft ² (10.9 m ²)
12" x 24" x 3/8" (30.5 x 61 x 1 cm)	384 ft ² (35.7 m ²)	194 ft ² (18 m ²)
6" x 36" x 3/8" (15.2 x 91.4 x 1 cm)	248 ft ² (23 m ²)	126 ft ² (11.7 m ²)
9 x 36" x 3/8" (22.9 x 91.4 x 1 cm)	346 ft ² (32.2 m ²)	175 ft ² (16.2 m ²)
12" x 48" x 3/8" (30.5 x 122 x 1 cm)	461 ft ² (42.8 m ²)	232 ft ² (21.5 m ²)

Chart for estimating purposes. Coverage may vary based on installation practices and jobsite conditions. For more tile and joint sizes, use the [Material Calculator](#) at CustomBuildingProducts.com or contact CUSTOM Technical Services at [800-282-8786](tel:800-282-8786).



Polyblend® Sanded Grout

1 Product Name

Polyblend® Sanded Grout

2 Manufacturer

Custom Building Products
 Technical Services
 10400 Pioneer Boulevard, Unit 3
 Santa Fe Springs, CA 90670
 Customer Support: 800-272-8786
 Technical Services: 800-282-8786
 Fax: 800- 200-7765
 Email: contactus@cbpmail.net
custombuildingproducts.com

3 Product Description

A polymer-modified, cement-based sanded grout that produces hard, dense joints that resist shrinking, cracking and wear. Formulated for durability, Polyblend® Sanded Grout accommodates 1/8"-1/2" (3.1-12.7 mm) joints for interior or exterior installations, including floors, countertops, walls, ceilings, showers, fountains and pools.

Key Features

- Easy to use - Just mix with water
- Polymer fortified for hard, durable, professional results

Uses

- Use to fill joint widths 1/8" to 1/2" (3.1 to 12.7 mm)
- May be used for both floor and wall installations
- Interior and exterior applications
- Residential and commercial applications
- Countertops, tub surrounds, showers and high traffic areas
- Submerged conditions (swimming pools, spas, water features and fountains)

Suitable Tile Types

- Vitreous, semi-vitreous or non-vitreous tile: ceramic, mosaic, quarry, cement body tiles
- Impervious porcelain and glass tile
- Brick and stone veneer
- Cement-based precast terrazzo
- Natural stone tile

Composition of Product

Polyblend® Sanded Grout is a dry, Portland cement based grout with silica sand, inorganic aggregates and chemicals.

Benefits of Product in the Installation

- Hard, durable grout joints
- Resists shrinking, cracking, powdering and wear



Limitations to the Product

- Should not be installed when ambient or surface temperature is lower than 50°F (10°C) or higher than 100°F (38°C).
- Some ceramic, glass, metal, marble or stone tiles can be scratched or damaged by the silica aggregate filler. Perform a test on a small area prior to use. [Polyblend® Non-Sanded Grout](#) may be appropriate for joints up to 1/8" or for tile not suited for sanded grout.
- Tile or stone with high absorption, surfaces that are porous or rough, textured surfaces and some types of porcelain tile may require sealing prior to grouting to prevent possible staining. Use [Aqua Mix® Grout Release](#) or [TileLab® SurfaceGard® Sealer](#) to prevent staining when required.
- Color variation can occur due to tile type, tile porosity, jobsite conditions, application and cleaning techniques. Variation can be minimized by following directions and using as little water as possible for cleanup.
- Not for use in either industrial applications or in areas subjected to harsh or continuous chemicals, high heat or high-pressure cleaning. For heavy industrial tile installations, use [CEG-IG 100% Solids Epoxy Grout](#).
- Chemicals in salt-based pool filtration systems can cause a reaction with blue, green and red grouts. Contact Technical Services for recommendations.
- Not for use in movement joints or changes of plane in the tile installation. In these areas, use an appropriate caulk or sealant such as [Commercial 100% Silicone Caulk](#) or [Polyblend® Ceramic Tile Caulk](#).

Packaging

Available in 3 sizes:

- 1 lb (.45 kg) tub
- 7 lb (3.17 kg) box
- 25 lb (11.34 kg) bag

25 lb bag and 7 lb box are available in 48 standard colors; color matching is available. 1 lb grout is available in 4 colors.



Polyblend® Sanded Grout

4 Technical Data

Applicable Standards

American National Standards Institute (ANSI) ANSI A108.10 & A118.6 of the American National Standards for the Installation of Ceramic Tile
ASTM International (ASTM)

- ASTM C109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens)
- ASTM C531 Standard Test Method for Linear Shrinkage
- ASTM C580 Standard Test method for Flexural Strength
- ISO 13007-3

Approvals

Polyblend® Sanded Grout exceeds ANSI A118.6 standards.

Technical Chart

Property	Test Method	Requirement	Typical Results
Pot Life			1 - 2 Hours
Shrinkage	A118.6 Section 4.3	< 0.20%	<0.08%
Water Absorption	A118.6 Section 4.4	< 10%	<8%
28 Day Compressive Strength	A118.6 Section 4.5	> 3000 psi	4650 psi (327 kg/cm sq.)
Tensile Strength	A118.6 Section 4.6	> 300 psi	423 psi (29.7 kg/cm sq.)
Flexural Strength	A118.6 Section 4.7	> 500 psi	990 psi (69.6 kg/cm sq.)

Environmental Consideration

Custom® Building Products is committed to environmental responsibility in both products produced and in manufacturing practices. Use of this product can contribute towards LEED® v3 certification:

- Up to 2 points towards MR Credit 5, Regional Materials
- Up to 1 point towards IEQ Credit 4.1, Low-Emitting Materials – Adhesives & Sealants

5 Instructions

General Surface Prep

USE CHEMICAL-RESISTANT GLOVES, such as nitrile, when handling product.

Tile or stone must be firmly bonded to a sound substrate, and setting material must be cured a minimum 24-48 hours before cement grout is applied, unless rapid-setting mortars are used. See the corresponding data sheet for the bonding mortars used in your application. Remove spacers and ensure that the grout joints are uniform in depth and width and free of loose debris, contaminants and excess mortar. Use [TileLab® SurfaceGard® Sealer](#) or [Aqua Mix® Grout Release](#) to seal tile or stone subject to staining or when using a grout that contrasts with the color of the tile.

Mixing Ratios

- Mix 2 qt (1.89 L) clean water to 25 lb (11.34 kg) grout.
- Mix 1 pt (.473 L) clean water to 7 lb (3.17 kg) grout.
- For 1 lb grout, see package for fill line indicator.

Mixing Procedures

When installing more than 1 container of grout at a time, blend dry powders prior to mixing with water. Mix with a trowel or low speed mixer (less than 300 rpm) to achieve a smooth, lump-free consistency. Let the mixture stand (slake) for 10 minutes, and then remix and use. Periodically remix to keep the mixture workable, but do not add water, which can weaken the grout, cause color variation and possible cause shrinkage, cracks and pinholes. Discard grout when it becomes too stiff to work.

Application of Product

Installation must conform to ANSI A108.10. Lightly dampen absorptive, highly porous tile with clean, cool water, but leave no standing water in the joints. Holding a rubber grout float at a 45° angle, completely fill the joints. Holding the edge of the float at a 90° angle, remove excess grout. At 70° F, do not spread more grout than can be cleaned within 30 minutes of the grout firming and use as little water as possible for grout clean-up (higher temperatures may shorten this time frame). Using a damp, small pore grout sponge in a circular motion, smooth and level joints and remove excess grout. Change the water and rinse the sponge frequently. Haze can be removed after 3 hours with cheesecloth or wrung-out sponge. If haze persists, the installation can be washed after three days with [Aqua Mix NanoScrub](#) or after ten days with [Aqua Mix® Sulfamic Acid Crystals](#), [TileLab® Sulfamic Acid Cleaner](#) or [Aqua Mix® Cement Grout Haze Remover](#). Perform a test in an inconspicuous area prior to complete application. Movement joints are required for perimeters and other changes of plane in all installations. See TCNA Detail EJ171 for recommendations.

Curing of Product

Curing time is affected by ambient and surface temperatures and humidity. For exterior applications, it is recommended that the installation is misted periodically with clean, cool water for 3 days.

Exterior applications must be protected from rain, snow and other wet conditions for at least 7 days with temperature above 50° F (10° C). If inclement weather is expected, protect the work area with tenting at least 1 foot (30 cm) above the finished surface to allow air flow. Enclose and protect installations and maintain >50° F (10° C) temperatures for at least 72 hours for proper cure.

Sealing of Grout

Use a pH-neutral, water-based, penetrating sealer such as [AquaMix Sealer's Choice Gold](#) or [TileLab Surface Guard](#).

Cleaning of equipment

Clean tools and hands with water before the material dries.



Polyblend® Sanded Grout

Health Precautions

This product contains Portland cement. Avoid eye contact or prolonged contact with skin. Wash thoroughly after handling. If eye contact occurs, flush with water for 15 minutes and consult a physician. Use with adequate ventilation; do not breathe dust and wear a NIOSH approved respirator. If ingested, do not induce vomiting; call a physician immediately.

Conformance to Building Codes

Installation must comply with the requirements of all applicable local, state and federal code jurisdictions.



CUSTOM®

Polyblend® Sanded Grout

6 Availability & Cost

Location	Grout Color	Item Code	Size	Package	Item Code	Size	Package
USA	#9 Natural Gray	PBG097-4	7 lb (3.17 kg)	Box	PBG0925	25 lb (11.34 kg)	Bag
USA	#10 Antique White	PBG107-4	7 lb (3.17 kg)	Box	PBG1025	25 lb (11.34 kg)	Bag
USA	#11 Snow White	PBG117-4	7 lb (3.17 kg)	Box	PBG1125	25 lb (11.34 kg)	Bag
USA	#19 Pewter	PBG197-4	7 lb (3.17 kg)	Box	PBG1925	25 lb (11.34 kg)	Bag
USA	#22 Sahara Tan	PBG227-4	7 lb (3.17 kg)	Box	PBG2225	25 lb (11.34 kg)	Bag
USA	#45 Summer Wheat	PBG457-4	7 lb (3.17 kg)	Box	PBG4525	25 lb (11.34 kg)	Bag
USA	#50 Nutmeg	PBG507-4	7 lb (3.17 kg)	Box	PBG5025	25 lb (11.34 kg)	Bag
USA	#52 Tobacco Brown	PBG527-4	7 lb (3.17 kg)	Box	PBG5225	25 lb (11.34 kg)	Bag
USA	#59 Saddle Brown	PBG597-4	7 lb (3.17 kg)	Box	PBG5925	25 lb (11.34 kg)	Bag
USA	#60 Charcoal	PBG607-4	7 lb (3.17 kg)	Box	PBG6025	25 lb (11.34 kg)	Bag
USA	#95 Sable Brown	PBG957-4	7 lb (3.17 kg)	Box	PBG9525	25 lb (11.34 kg)	Bag
USA	#101 Quartz	PBG1017-4	7 lb (3.17 kg)	Box	PBG10125	25 lb (11.34 kg)	Bag
USA	#105 Earth	PBG1057-4	7 lb (3.17 kg)	Box	PBG10525	25 lb (11.34 kg)	Bag
USA	#115 Platinum	PBG1157-4	7 lb (3.17 kg)	Box	PBG11525	25 lb (11.34 kg)	Bag
USA	#122 Linen	PBG1227-4	7 lb (3.17 kg)	Box	PBG12225	25 lb (11.34 kg)	Bag
USA	#135 Mushroom	PBG1357-4	7 lb (3.17 kg)	Box	PBG13525	25 lb (11.34 kg)	Bag
USA	#145 Light Smoke	PBG1457-4	7 lb (3.17 kg)	Box	PBG14525	25 lb (11.34 kg)	Bag
USA	#156 Fawn	PBG1567-4	7 lb (3.17 kg)	Box	PBG15625	25 lb (11.34 kg)	Bag
USA	#165 Delorean Gray	PBG1657-4	7 lb (3.17 kg)	Box	PBG16525	25 lb (11.34 kg)	Bag
USA	#172 Urban Putty	PBG1727-4	7 lb (3.17 kg)	Box	PBG17225	25 lb (11.34 kg)	Bag
USA	#180 Sandstone	PBG1807-4	7 lb (3.17 kg)	Box	PBG18025	25 lb (11.34 kg)	Bag
USA	#183 Chateau	PBG1837-4	7 lb (3.17 kg)	Box	PBG18325	25 lb (11.34 kg)	Bag
USA	#185 New Taupe	PBG1857-4	7 lb (3.17 kg)	Box	PBG18525	25 lb (11.34 kg)	Bag
USA	#186 Khaki	PBG1867-4	7 lb (3.17 kg)	Box	PBG18625	25 lb (11.34 kg)	Bag
USA	#333 Alabaster	PBG3337-4	7 lb (3.17 kg)	Box	PBG33325	25 lb (11.34 kg)	Bag
USA	#335 Winter Gray	PBG3357-4	7 lb (3.17 kg)	Box	PBG33525	25 lb (11.34 kg)	Bag
USA	#370 Dove Gray	PBG3707-4	7 lb (3.17 kg)	Box	PBG37025	25 lb (11.34 kg)	Bag
USA	#380 Haystack	PBG3807-4	7 lb (3.17 kg)	Box	PBG38025	25 lb (11.34 kg)	Bag
USA	#381 Bright White	PBG3817-4	7 lb (3.17 kg)	Box	PBG38125	25 lb (11.34 kg)	Bag
USA	#382 Bone	PBG3827-4	7 lb (3.17 kg)	Box	PBG38225	25 lb (11.34 kg)	Bag
USA	#386 Oyster Gray	PBG3867-4	7 lb (3.17 kg)	Box	PBG38625	25 lb (11.34 kg)	Bag
USA	#540 Truffle	PBG5407-4	7 lb (3.17 kg)	Box	PBG54025	25 lb (11.34 kg)	Bag
USA	#541 Walnut	PBG5417-4	7 lb (3.17 kg)	Box	PBG54125	25 lb (11.34 kg)	Bag
USA	#542 Graystone	PBG5427-4	7 lb (3.17 kg)	Box	PBG54225	25 lb (11.34 kg)	Bag
USA	#543 Driftwood	PBG5437-4	7 lb (3.17 kg)	Box	PBG54325	25 lb (11.34 kg)	Bag
USA	#544 Rolling Fog	PBG5447-4	7 lb (3.17 kg)	Box	PBG54425	25 lb (11.34 kg)	Bag
USA	#545 Bleached Wood	PBG5457-4	7 lb (3.17 kg)	Box	PBG54525	25 lb (11.34 kg)	Bag
USA	#546 Cape Gray	PBG5467-4	7 lb (3.17 kg)	Box	PBG54625	25 lb (11.34 kg)	Bag
USA	#547 Ice Blue	PBG5477-4	7 lb (3.17 kg)	Box	PBG54725	25 lb (11.34 kg)	Bag
USA	#548 Surf Green	PBG5487-4	7 lb (3.17 kg)	Box	PBG54825	25 lb (11.34 kg)	Bag
USA - Special Order	All 40 colors				PBGXXX50	50 lb (22.68 kg)	Bag


CUSTOM®

Polyblend® Sanded Grout

Location	Grout Color	Item Code	Size	Package	Item Code	Size	Package
Canada	#9 Natural Gray	CPBG097-4	7 lb (3.17 kg)	Box	CPBG0925	25 lb (11.34 kg)	Bag
Canada	#10 Antique White	CPBG107-4	7 lb (3.17 kg)	Box	CPBG1025	25 lb (11.34 kg)	Bag
Canada	#11 Snow White	CPBG117-4	7 lb (3.17 kg)	Box	CPBG1125	25 lb (11.34 kg)	Bag
Canada	#19 Pewter	CPBG197-4	7 lb (3.17 kg)	Box	CPBG1925	25 lb (11.34 kg)	Bag
Canada	#22 Sahara Tan	CPBG227-4	7 lb (3.17 kg)	Box	CPBG2225	25 lb (11.34 kg)	Bag
Canada	#45 Summer Wheat	CPBG457-4	7 lb (3.17 kg)	Box	CPBG4525	25 lb (11.34 kg)	Bag
Canada	#50 Nutmeg	CPBG507-4	7 lb (3.17 kg)	Box	CPBG5025	25 lb (11.34 kg)	Bag
Canada	#52 Tobacco Brown	CPBG527-4	7 lb (3.17 kg)	Box	CPBG5225	25 lb (11.34 kg)	Bag
Canada	#59 Saddle Brown	CPBG597-4	7 lb (3.17 kg)	Box	CPBG5925	25 lb (11.34 kg)	Bag
Canada	#60 Charcoal	CPBG607-4	7 lb (3.17 kg)	Box	CPBG6025	25 lb (11.34 kg)	Bag
Canada	#95 Sable Brown	CPBG957-4	7 lb (3.17 kg)	Box	CPBG9525	25 lb (11.34 kg)	Bag
Canada	#101 Quartz	CPBG1017-4	7 lb (3.17 kg)	Box	CPBG10125	25 lb (11.34 kg)	Bag
Canada	#105 Earth	CPBG1057-4	7 lb (3.17 kg)	Box	CPBG10525	25 lb (11.34 kg)	Bag
Canada	#115 Platinum	CPBG1157-4	7 lb (3.17 kg)	Box	CPBG11525	25 lb (11.34 kg)	Bag
Canada	#122 Linen	CPBG1227-4	7 lb (3.17 kg)	Box	CPBG12225	25 lb (11.34 kg)	Bag
Canada	#135 Mushroom	CPBG1357-4	7 lb (3.17 kg)	Box	CPBG13525	25 lb (11.34 kg)	Bag
Canada	#145 Light Smoke	CPBG1457-4	7 lb (3.17 kg)	Box	CPBG14525	25 lb (11.34 kg)	Bag
Canada	#156 Fawn	CPBG1567-4	7 lb (3.17 kg)	Box	CPBG15625	25 lb (11.34 kg)	Bag
Canada	#165 Delorean Gray	CPBG1657-4	7 lb (3.17 kg)	Box	CPBG16525	25 lb (11.34 kg)	Bag
Canada	#172 Urban Putty	CPBG1727-4	7 lb (3.17 kg)	Box	CPBG17225	25 lb (11.34 kg)	Bag
Canada	#180 Sandstone	CPBG1807-4	7 lb (3.17 kg)	Box	CPBG18025	25 lb (11.34 kg)	Bag
Canada	#183 Chateau	CPBG1837-4	7 lb (3.17 kg)	Box	CPBG18325	25 lb (11.34 kg)	Bag
Canada	#185 New Taupe	CPBG1857-4	7 lb (3.17 kg)	Box	CPBG18525	25 lb (11.34 kg)	Bag
Canada	#186 Khaki	CPBG1867-4	7 lb (3.17 kg)	Box	CPBG18625	25 lb (11.34 kg)	Bag
Canada	#333 Alabaster	CPBG3337-4	7 lb (3.17 kg)	Box	CPBG33325	25 lb (11.34 kg)	Bag
Canada	#335 Winter Gray	CPBG3357-4	7 lb (3.17 kg)	Box	CPBG33525	25 lb (11.34 kg)	Bag
Canada	#370 Dove Gray	CPBG3707-4	7 lb (3.17 kg)	Box	CPBG37025	25 lb (11.34 kg)	Bag
Canada	#380 Haystack	CPBG3807-4	7 lb (3.17 kg)	Box	CPBG38025	25 lb (11.34 kg)	Bag
Canada	#381 Bright White	CPBG3817-4	7 lb (3.17 kg)	Box	CPBG38125	25 lb (11.34 kg)	Bag
Canada	#382 Bone	CPBG3827-4	7 lb (3.17 kg)	Box	CPBG38225	25 lb (11.34 kg)	Bag
Canada	#386 Oyster Gray	CPBG3867-4	7 lb (3.17 kg)	Box	CPBG38625	25 lb (11.34 kg)	Bag
Canada	#540 Truffle	CPBG5407-4	7 lb (3.17 kg)	Box	CPBG54025	25 lb (11.34 kg)	Bag
Canada	#541 Walnut	CPBG5417-4	7 lb (3.17 kg)	Box	CPBG54125	25 lb (11.34 kg)	Bag
Canada	#542 Graystone	CPBG5427-4	7 lb (3.17 kg)	Box	CPBG54225	25 lb (11.34 kg)	Bag
Canada	#543 Driftwood	CPBG5437-4	7 lb (3.17 kg)	Box	CPBG54325	25 lb (11.34 kg)	Bag
Canada	#544 Rolling Fog	CPBG5447-4	7 lb (3.17 kg)	Box	CPBG54425	25 lb (11.34 kg)	Bag
Canada	#545 Bleached Wood	CPBG5457-4	7 lb (3.17 kg)	Box	CPBG54525	25 lb (11.34 kg)	Bag
Canada	#546 Cape Gray	CPBG5467-4	7 lb (3.17 kg)	Box	CPBG54625	25 lb (11.34 kg)	Bag
Canada	#547 Ice Blue	CPBG5477-4	7 lb (3.17 kg)	Box	CPBG54725	25 lb (11.34 kg)	Bag
Canada	#548 Surf Green	CPBG5487-4	7 lb (3.17 kg)	Box	CPBG54825	25 lb (11.34 kg)	Bag

Location	Grout Color	Item Code	Size	Package
USA	#9 Natural Gray	PBG-091-4	1 lb	Tub
USA	#122 Linen	PBG-1221-4	1 lb	Tub
USA	#380 Haystack	PBG-3801-4	1 lb	Tub
USA	#382 Bone	PBG-3821-4	1 lb	Tub



CUSTOM®

Polyblend® Sanded Grout

See our color card for truest color representation when selecting or specifying a grout color. Final installed shade may vary with the tile type, color and porosity as well as jobsite conditions and finishing techniques. For best results, perform a test on a small, inconspicuous area or create a sample board prior to installation.

7 Product Warranty

Obtain the applicable **LIMITED PRODUCT WARRANTY** at www.custombuildingproducts.com/product-warranty or send a written request to Custom Building Products, Inc., Five Concourse Parkway, Atlanta, GA 30328, USA. Manufactured under the authority of Custom Building Products, Inc. © 2017 Quikrete International, Inc.

8 Product Maintenance

Clean with a pH-neutral cleaner such as [Aqua Mix AquaKleen](#), [Aqua Mix Concentrated Tile & Stone Cleaner](#) or [TileLab Grout & Tile Cleaner](#).

9 Technical Services Information

For technical assistance, contact Custom® technical services at 800-272-8786 or visit custombuildingproducts.com.

10 Filing System

Additional product information is available from the manufacturer upon request.

Related Products

Polyblend® Ceramic Tile Caulk

Commercial 100% Silicone Sealant

TileLab® SurfaceGard® Sealer

StainBlocker for Grout

Polyblend® Non-Sanded Grout



Polyblend® Sanded Grout

Coverage

For 25 lb. bag of Polyblend in ft² (m²) per bag

Tile Size	Joint Width				
	1/8" (3 mm)	3/16" (4.8 mm)	1/4" (6.3 mm)	3/8" (9.5 mm)	1/2" (13 mm)
Width x Length x Thickness					
1" x 1" x 1/4" (2.5 x 2.5 x .64 cm)	54 ft ² (5 m ²)	40 ft ² (3.7 m ²)	33 ft ² (3.1 m ²)	27 ft ² (2.5 m ²)	24 ft ² (2.2 m ²)
2" x 2" x 1/4" (5 x 5 x .64 cm)	96 ft ² (8.9 m ²)	68 ft ² (6.3 m ²)	54 ft ² (5.0 m ²)	40 ft ² (3.7 m ²)	33 ft ² (3.1 m ²)
3" x 3" x 1/4" (7.6 x 7.6 x .64 cm)	138 ft ² (12.9 m ²)	96 ft ² (8.9 m ²)	74 ft ² (7 m ²)	54 ft ² (5 m ²)	43 ft ² (4 m ²)
4.25" x 4.25" x 1/4" (10.8 x 10.8 x .64 cm)	192 ft ² (17.8 m ²)	131 ft ² (12.2 m ²)	101 ft ² (9.4 m ²)	71 ft ² (6.6 m ²)	56 ft ² (5.2 m ²)
6" x 6" x 1/4" (15.2 x 15.2 x .64 cm)	266 ft ² (24.7 m ²)	181 ft ² (16.8 m ²)	139 ft ² (12.9 m ²)	96 ft ² (8.9 m ²)	75 ft ² (7.0 m ²)
8" x 8" x 3/8" (20.3 x 20.3 x 1 cm)	234 ft ² (21.7 m ²)	158 ft ² (14.7 m ²)	121 ft ² (11.2 m ²)	83 ft ² (7.7 m ²)	64 ft ² (6 m ²)
12" x 12" x 3/8" (30.5 x 30.5 x 1 cm)	348 ft ² (32.3 m ²)	234 ft ² (21.7 m ²)	177 ft ² (16.5 m ²)	121 ft ² (11.2 m ²)	92 ft ² (8.6 m ²)
16" x 16" x 3/8" (40.6 x 40.6 x 1 cm)	462 ft ² (42.8 m ²)	310 ft ² (28.8 m ²)	234 ft ² (21.7 m ²)	158 ft ² (14.7 m ²)	121 ft ² (11.2 m ²)
18" x 18" x 3/8" (45.7 x 45.7 x 1 cm)	518 ft ² (48.1 m ²)	348 ft ² (32.3 m ²)	262 ft ² (24.4 m ²)	177 ft ² (16.5 m ²)	135 ft ² (12.5 m ²)
20" x 20" x 3/8" (50.8 x 50.8 x 1 cm)	574 ft ² (53.4 m ²)	385 ft ² (35.8 m ²)	291 ft ² (27 m ²)	196 ft ² (18.2 m ²)	149 ft ² (13.8 m ²)
24" x 24" x 3/8" (61 x 61 x 1 cm)	688 ft ² (63.9 m ²)	461 ft ² (42.8 m ²)	348 ft ² (32.3 m ²)	234 ft ² (21.7 m ²)	177 ft ² (16.5 m ²)
6" x 24" x 3/8" (15.2 x 61 x 1 cm)	279 ft ² (26 m ²)	189 ft ² (17.5 m ²)	143 ft ² (13.3 m ²)	98 ft ² (9.1 m ²)	75 ft ² (7 m ²)
12" x 24" x 3/8" (30.5 x 61 x 1 cm)	461 ft ² (42.8 m ²)	310 ft ² (28.8 m ²)	234 ft ² (21.7 m ²)	158 ft ² (14.7 m ²)	121 ft ² (11.2 m ²)
6" x 36" x 3/8" (15.2 x 91.4 x 1 cm)	299 ft ² (27.8 m ²)	202 ft ² (18.7 m ²)	153 ft ² (14.2 m ²)	104 ft ² (9.7 m ²)	80 ft ² (7.4 m ²)
9 x 36" x 3/8" (22.9 x 91.4 x 1 cm)	416 ft ² (38.6 m ²)	279 ft ² (26 m ²)	211 ft ² (19.6 m ²)	143 ft ² (13.3 m ²)	109 ft ² (10.2 m ²)
12" x 48" x 3/8" (30.5 x 122 x 1 cm)	552 ft ² (51.3 m ²)	370 ft ² (34.4 m ²)	279 ft ² (26 m ²)	189 ft ² (17.5 m ²)	143 ft ² (13.3 m ²)

For 7 lb bag of Polyblend (sq ft/sq m per bag)

Tile Size	Joint Width				
	1/8" (3 mm)	3/16" (4.8 mm)	1/4" (6.3 mm)	3/8" (9.5 mm)	1/2" (13 mm)
Width x Length x Thickness					
1" x 1" x 1/4" (2.5 x 2.5 x .64 cm)	15 ft ² (1.4 m ²)	11 ft ² (1 m ²)	9 ft ² (.9 m ²)	8 ft ² (.7 m ²)	7 ft ² (.6 m ²)
2" x 2" x 1/4" (5 x 5 x .64 cm)	27 ft ² (2.5 m ²)	19 ft ² (1.8 m ²)	15 ft ² (1.4 m ²)	11 ft ² (1 m ²)	9 ft ² (.9 m ²)
3" x 3" x 1/4" (7.6 x 7.6 x .64 cm)	39 ft ² (3.6 m ²)	27 ft ² (2.5 m ²)	21 ft ² (1.9 m ²)	15 ft ² (1.4 m ²)	12 ft ² (1.1 m ²)
4.25" x 4.25" x 1/4" (10.8 x 10.8 x .64 cm)	54 ft ² (5 m ²)	37 ft ² (3.4 m ²)	28 ft ² (2.6 m ²)	20 ft ² (1.9 m ²)	16 ft ² (1.5 m ²)
6" x 6" x 1/4" (15.2 x 15.2 x .64 cm)	74 ft ² (6.9 m ²)	51 ft ² (4.7 m ²)	39 ft ² (3.6 m ²)	27 ft ² (2.5 m ²)	21 ft ² (1.9 m ²)
8" x 8" x 3/8" (20.3 x 20.3 x 1 cm)	66 ft ² (6.1 m ²)	44 ft ² (4.1 m ²)	34 ft ² (3.1 m ²)	23 ft ² (2.2 m ²)	18 ft ² (1.7 m ²)
12" x 12" x 3/8" (30.5 x 30.5 x 1 cm)	97 ft ² (9 m ²)	66 ft ² (6.1 m ²)	50 ft ² (4.6 m ²)	34 ft ² (3.1 m ²)	26 ft ² (2.4 m ²)
16" x 16" x 3/8" (40.6 x 40.6 x 1 cm)	129 ft ² (12 m ²)	87 ft ² (8.1 m ²)	66 ft ² (6.1 m ²)	44 ft ² (4.1 m ²)	34 ft ² (3.1 m ²)
18" x 18" x 3/8" (45.7 x 45.7 x 1 cm)	145 ft ² (13.5 m ²)	97 ft ² (9 m ²)	73 ft ² (6.8 m ²)	50 ft ² (4.6 m ²)	38 ft ² (3.5 m ²)
20" x 20" x 3/8" (50.8 x 50.8 x 1 cm)	161 ft ² (14.9 m ²)	108 ft ² (10 m ²)	81 ft ² (7.6 m ²)	55 ft ² (5.1 m ²)	42 ft ² (3.9 m ²)
24" x 24" x 3/8" (61 x 61 x 1 cm)	193 ft ² (17.9 m ²)	129 ft ² (12 m ²)	97 ft ² (9 m ²)	66 ft ² (6.1 m ²)	50 ft ² (4.6 m ²)
6" x 24" x 3/8" (15.2 x 61 x 1 cm)	78 ft ² (7.3 m ²)	53 ft ² (4.9 m ²)	40 ft ² (3.7 m ²)	27 ft ² (2.5 m ²)	21 ft ² (2.0 m ²)
12" x 24" x 3/8" (30.5 x 61 x 1 cm)	129 ft ² (12 m ²)	87 ft ² (8.1 m ²)	66 ft ² (6.1 m ²)	44 ft ² (4.1 m ²)	34 ft ² (3.1 m ²)
6" x 36" x 3/8" (15.2 x 91.4 x 1 cm)	84 ft ² (7.8 m ²)	56 ft ² (5.2 m ²)	43 ft ² (4 m ²)	29 ft ² (2.7 m ²)	22 ft ² (2.1 m ²)
9 x 36" x 3/8" (22.9 x 91.4 x 1 cm)	116 ft ² (10.8 m ²)	78 ft ² (7.3 m ²)	59 ft ² (5.5 m ²)	40 ft ² (3.7 m ²)	31 ft ² (2.8 m ²)
12" x 48" x 3/8" (30.5 x 122 x 1 cm)	155 ft ² (14.4 m ²)	104 ft ² (9.6 m ²)	78 ft ² (7.3 m ²)	53 ft ² (4.9 m ²)	40 ft ² (3.7 m ²)

Chart for estimating purposes. Coverage may vary based on installation practices and jobsite conditions. For more tile and joint sizes, use the [Material Calculator](#) at CustomBuildingProducts.com or contact CUSTOM Technical Services at [800-282-8786](tel:800-282-8786).





PROFILE OF INNOVATION

WATERPROOFING MEMBRANES



INNOVATIVE SOLUTIONS FOR CERAMIC AND STONE TILE

BONDED WATERPROOF MEMBRANES AND VAPOR RETARDERS

Ceramic and stone tiles are durable, easy to maintain, and hygienic, representing ideal surface coverings in wet areas. However, since tiles and grout are not inherently waterproof, it is essential to protect the substrate from moisture penetration.

Application and Function

8.1 Schluter®-KERDI is a pliable, sheet-applied, bonded waterproof membrane and vapor retarder with limited crack-bridging capabilities. It is made of soft polyethylene, which is covered on both sides with a special fleece webbing to anchor the membrane in the thin-set mortar.

KERDI was developed as a waterproofing membrane to be used in conjunction with ceramic and stone tile coverings. Tiles can be installed directly on KERDI using the thin-bed method. Other trowel-applied covering materials, such as plaster, can also be used.

Schluter®-KERDI-DS is a bonded waterproofing membrane and vapor retarder with very low water vapor permeance for use in continuous use steam rooms and similar applications.

Various KERDI waterproofing accessories are available. Use KERDI-BAND, in widths of 5" (12.5 cm), 7-1/4" (18.5 cm), or 10" (25 cm) to seal butt joints or corner joints. KERDI-FLEX, in 5" (12.5 cm) or 10" (25 cm) widths, is used to seal expansion joints or flexible edge joints.

Preformed, seamless corners include the following. KERDI-KERECK-F are used to seal 90° inside and outside corners. KERDI-



8.1 Schluter®-KERDI
8.1 Schluter®-KERDI-DS

KERS-B are used to seal 135° corners at triangular shower benches and neo-angle shower curbs. KERDI-KERS are used to seal floor/wall/shower base connections in curbless shower applications where the KERDI-LINE linear drain is installed adjacent to the wall.

KERDI-SEAL-PS/-MV are prefabricated sections of KERDI with overmolded rubber gaskets that are used to seal pipe protrusions through the KERDI waterproofing membrane (e.g., at showerheads and tub spouts) and protect moisture-sensitive backing panels at the mixing valve.



Material Properties and Areas of Application

KERDI features a polyethylene core with a polypropylene fleece laminated to both sides. The material is physiologically safe and does not require special disposal. KERDI is 8-mil thick and has a water vapor permeance of 0.90 perms, when tested according to ASTM E96, using Procedure E at 90% relative humidity. KERDI-DS is 20-mil thick and features additives to produce a water vapor permeance of 0.18 perms.



Schluter®-KERDI-DRAIN assembly with Schluter®-KERDI waterproofing membrane.

KERDI and KERDI-DS are waterproof and resistant to most chemicals commonly encountered in tiled environments. They are resistant to aging and will not rot. KERDI and KERDI-DS are highly resistant to saline solutions, acid and alkaline solutions, many organic solvents, alcohols, and oils. Information regarding their resistance to specific substances can be provided if concentration, temperature, and duration of exposure are known. For acid-resistant coverings, use an epoxy adhesive to set and grout the tile.

KERDI and KERDI-DS are used on wall and floor surfaces where protection against the penetration of moisture or other harmful substances is necessary. KERDI is suitable for use in showers, intermittent use steam showers, tub surrounds, and areas surrounding swimming pools. Industrial applications include the food industry, breweries, and dairies. KERDI-DS is suitable for use in continuous use steam rooms and other applications with similar vapor management requirements. Before placing the membranes, verify that the substrate is clean, even, and load bearing. Surfaces that inhibit proper adhesion must be removed or appropriately treated.

KERDI and KERDI-DS meet the American National Standard for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone Installations (ANSI A118.10). The membranes are listed by cUPC® and evaluated by ICC-ES (Report Nos. ESR-2467 and PMG-1204). For copies of these documents, please contact Schluter®-Systems at 800- 472-4588 (USA) or 800-667-8746 (Canada) or by e-mail at info@schluter.com. Links to the documents can also be accessed at www.schluter.com.

KERDI and KERDI-DS have been evaluated according to the "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1" for California Specification 01350 and found to comply with the VOC requirements. California Specification 01350 is referenced by various green building standards and rating systems.

Installation

1. The substrate must be clean, even, and load bearing. The thin-set mortar used for bonding KERDI must be appropriate for the substrate, and it must penetrate and engage the KERDI fleece. Generally, an unmodified thin-set mortar is used. Cut KERDI to size prior to application.
2. Apply thin-set mortar to the substrate using a 1/4" x 3/16" (6 x 5 mm) V-notched trowel or the KERDI-TROWEL, which features a 1/8" x 1/8" (3 x 3 mm) square-notched design (Note the open time of the mortar). Press KERDI fully into the bond coat. Work the KERDI into the mortar by applying pressure to the membrane with the flat side of the trowel (held at an angle) in smooth, diagonal sweeps. Air bubbles must be avoided.
3. Seams can be constructed by overlapping the edges of the KERDI 2" (5 cm) using unmodified thin-set mortar, or by abutting the edges and covering the joint with KERDI-BAND using an unmodified thin-set mortar.
4. For inside and outside corners, adhere pre-formed KERDI-KERECK-F corners. For floor/wall connections, use KERDI-BAND. Install KERDI-SEAL-PS pipe seals at showerhead, body sprays, etc. and KERDI-SEAL-MV at the mixing valve. As an alternative to KERDI-SEAL-PS/-MV, KERDI-FIX or other

suitable sealant can be used to seal pipe protrusions and protect moisture-sensitive solid backing panels at the mixing valve.

5. Connections to fixed building elements can be achieved by using KERDI, KERDI-BAND, or KERDI-FLEX in conjunction with KERDI-FIX, suitable trowel-applied waterproofing materials (such as urethane or similar), that require atmospheric moisture to cure, or other suitable sealing compounds.
6. KERDI shall be separated at existing expansion, structural, and flexible edge joints. Cover the joints with KERDI-FLEX. To allow for greater movement, the center section of the KERDI-FLEX can be tucked into the cavity of the expansion joint prior to bonding.
7. Once the entire membrane—with seams, corners, and connections—has been completely bonded, and therefore waterproofed, the covering may be applied.

Note: Water testing of the assembly

Prior to setting tile, wait 24 hours to allow for final set of the mortar before testing to ensure waterproof performance of the assembly at seams and connections.

8. For tile installations using the thin-bed method, apply unmodified thin-set mortar directly to the exposed KERDI surface and install the tiles, ensuring full coverage. For acid-resistant coverings, use an epoxy adhesive to set and grout the tile.

Connection to Schluter®-KERDI-DRAIN

KERDI-DRAIN is a floor drain specifically designed to allow connections to KERDI or other bonded waterproof membranes, typically in shower applications. When adhering KERDI to KERDI-DRAIN, the membrane must be held back to the step in the fleeced bonding flange. Apply unmodified thin-set mortar to the bonding flange using a 1/4" x 3/16" (6 x 5 mm) V-notched trowel or the KERDI-TROWEL, which features a 1/8" x 1/8" (3 x 3 mm) square-notched design. Firmly press KERDI into the mortar with the flat side of the trowel to ensure 100% coverage and a watertight seal. When using the stainless steel KERDI-DRAIN bonding flange, KERDI is adhered to the flange with KERDI-FIX. The flange must be clean and free of grease or other contaminants prior to KERDI-FIX application.



Relevant industry standard guidelines for floor drains with integrated bonding flange include method B422 in the Tile Council of North America's (TCNA) Handbook for Ceramic, Glass and Stone Tile Installation and Method 326DR in the Terrazzo, Tile and Marble Association of Canada (TTMAC) Specification Guide 09300 Tile Installation Manual. Please contact Schluter®-Systems for the Schluter®-Shower System installation video and Floor Drains Technical Data Sheet.

Notes:

- 1) For complete installation guidelines and warranty criteria for showers, steam showers, steam rooms, and bathtub

surrounds, please contact Schluter®-Systems for a copy of the Schluter®-Shower System Installation Handbook (USA: 800-472-4588; Canada: 800-667-8746), or download it from our website at www.schluter.com.

- 2) Various configurations of KERDI-DRAIN and KERDI-LINE are listed by ICC-ES (Report No. PMG-1204), UPC® (IGC 195), CSA (B79), and NSF (as a special

engineered product meeting applicable requirements of ASME A112.6.3).. For copies of the above listings, please contact Schluter®-Systems at 800-472-4588 (USA) or 800-667-8746 (Canada) or by e-mail at info@schluter.com. Links to the above listings can also be accessed at www.schluter.com.

Product Item Numbers



8.1 Schluter®-KERDI				Waterproofing membrane
Item No.	Width	Length	Area	Thickness
KERDI 200/5M	3' 3" – 1 m	16' 5" – 5 m	54 ft ² – 5 m ²	8 mil
KERDI 200/10M	3' 3" – 1 m	33' – 10 m	108 ft ² – 10 m ²	8 mil
KERDI 200/20M	3' 3" – 1 m	65' 7" – 20 m	215 ft ² – 20 m ²	8 mil
KERDI 200	3' 3" – 1 m	98' 5" – 30 m	323 ft ² – 30 m ²	8 mil

8.1 Schluter®-KERDI-DS				Waterproofing membrane
Item No.	Width	Length	Area	Thickness
KERDI-DS	3' 3" – 1 m	98' 5" – 30 m	323 ft ² – 30 m ²	20 mil



8.1 Schluter®-KERDI-BAND				Waterproofing strip
Item No.	Width	Length	Thickness	
KEBA 100/125/5M	5" – 12.5 cm	16' 5" – 5 m	4 mil	
KEBA 100/125/10M	5" – 12.5 cm	33' – 10 m	4 mil	
KEBA 100/185/5M	7-1/4" – 18.5 cm	16' 5" – 5 m	4 mil	
KEBA 100/250/5M	10" – 25 cm	16' 5" – 5 m	4 mil	
KEBA 100/125	5" – 12.5 cm	98' 5" – 30 m	4 mil	
KEBA 100/185	7-1/4" – 18.5 cm	98' 5" – 30 m	4 mil	
KEBA 100/250	10" – 25 cm	98' 5" – 30 m	4 mil	



8.1 Schluter®-KERDI-FLEX				Waterproofing strip for use above movement joints
Item No.	Width	Length	Thickness	
FLEX 125/5M	5" – 12.5 cm	16' 5" – 5 m	12 mil	
FLEX 250/5M	10" – 25 cm	16' 5" – 5 m	12 mil	
FLEX 125/30	5" – 12.5 cm	98' 5" – 30 m	12 mil	
FLEX 250/30	10" – 25 cm	98' 5" – 30 m	12 mil	



8.1 Schluter®-KERDI-KERECK-F

Preformed corner

Item No.	Thickness	Packaging
KERECK / FI 2	4 mil	2 inside corners
KERECK / FI 10	4 mil	10 inside corners
KERECK / FA 2	4 mil	2 outside corners
KERECK / FA 10	4 mil	10 outside corners



8.1 Schluter®-KERDI-KERS-B

Preformed corner

Item No.	Thickness	Description	Packaging
KERECK135FI2	4 mil	Inside corner, 135°	2 units
KERECK135FI10	4 mil	Inside corner, 135°	10 units
KERSB135KLR	4 mil	Bench corners	1 right and 1 left
KERSB135K5LR	4 mil	Bench corners	5 right and 5 left
KERSB135K	4 mil	Bench/ neo-angle corner kit	1 right and 1 left bench corner, and 2 135° inside corners



8.1 Schluter®-KERDI-KERS

Preformed corner

Item No.	Thickness	Packaging
KERS 20 L	4 mil	Left inside corner - 20 mm
KERS 28 L	4 mil	Left inside corner - 28 mm
KERS 20 R	4 mil	Right inside corner - 20 mm
KERS 28 R	4 mil	Right inside corner - 28 mm



8.1 Schluter®-KERDI-SEAL-PS

Pipe seal with over-moulded rubber gasket

Item No.	Pipe nipple opening diam.	Thickness	Packaging
KMS 185/12	1/2" - 12.5 mm	4 mil	1 unit
KMS 185/20	3/4" - 20 mm	4 mil	1 unit
KMS 10185/12	1/2" - 12.5 mm	4 mil	10 units
KMS 10185/20	3/4" - 20 mm	4 mil	10 units



8.1 Schluter®-KERDI-SEAL-MV

Mixing valve seal with over-moulded rubber gasket

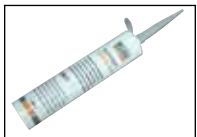
Item No.	Mixing valve opening diam.	Thickness	Packaging
KMSMV 235/114	4-1/2" - 114 mm	4 mil	1 unit
KMSMV 10235/114	4-1/2" - 114 mm	4 mil	10 units



Schluter®-KERDI-TROWEL

Trowel

Item No.	Notch size	Packaging
TRL-KER6	1/8" x 1/8" - 3 x 3 mm	6 units
TRL-KER	1/8" x 1/8" - 3 x 3 mm	1 unit



Schluter®-KERDI-FIX

Adhesive/sealant

Item No.	Cartridge Volume
KERDIFIX + <i>color</i> *	9.81 oz - 290 ml

*Color Codes



To complete the item number, add the *color* code (e.g., KERDIFIX / BW).



Schluter®-KERDI and Schluter®-KERDI-DS 10-Year Limited Warranty

COVERAGE AND CONDITIONS: Subject to the conditions and limitations as stated hereinafter, **Schluter-Systems*** warrants that **Schluter®-KERDI** or **Schluter®-KERDI-DS** (the "Product") will be free from manufacturing defects and will not rot, deteriorate or break down for a period of ten (10) years from the date of purchase only when the Product is used and installed in accordance with the terms and conditions of the Schluter®-Systems Waterproofing Membranes Technical Data Sheet and industry standard guidelines that are not in conflict with the Data Sheet in effect at the time of installation. Further, efflorescence is considered to be a natural occurrence with cementitious materials and is therefore not considered to be a defective condition and is not covered by this warranty. It is the responsibility of the owner/ builder/ installer to ensure the suitability of all building materials and all associated building materials for the owner's intended use. It is recommended that the owner consult with an experienced and professional installer.

RESOLUTION: If the Product fails to meet this warranty, then the owner's exclusive remedy and the sole obligation of Schluter-Systems, at its election, shall be to a) reinstall or replace the failed portion of the tile assembly or b) pay an amount not to exceed the original square foot cost of the installation of the tile assembly verified to be defective. Tile assembly is defined to include all Schluter®-KERDI or Schluter®-KERDI-DS materials, non-reusable tile surfaces, and the appropriate setting and grouting materials. Further, due to conditions beyond the control of Schluter-Systems (e.g., color and shade availability, discontinuation, normal wear and tear), Schluter-Systems cannot guarantee or warrant an exact match to the specific tile, stone, or other flooring materials used in the installation. In such events, substantially similar materials may be substituted.

DISCLAIMER: THERE ARE NO WARRANTIES BEYOND THIS EXPRESSED WARRANTY AS STATED ABOVE. ALL OTHER WARRANTIES, REPRESENTATIONS OR CONDITIONS, EXPRESSED OR IMPLIED, ARE DISCLAIMED AND EXCLUDED, INCLUDING WARRANTIES, REPRESENTATIONS OR CONDITIONS OF **MERCHANTABILITY** OR FITNESS FOR A PARTICULAR PURPOSE ARISING BY STATUTE OR OTHERWISE BY LAW OR FROM A COURSE OF DEALING OR USAGE OF TRADE. SCHLUTER-SYSTEMS EXCLUDES AND IN NO EVENT SHALL HAVE ANY LIABILITY FOR LOST PROFITS OR ANY OTHER INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, EXEMPLARY, OR CONSEQUENTIAL DAMAGES, ARISING OUT OF OR OTHERWISE CONNECTED TO FAILURE OF THE PRODUCT OR TILE ASSEMBLY OF WHICH IT IS PART, NOR MISUSE OF THE PRODUCT OR TILE ASSEMBLY, REGARDLESS OF ANY STRICT LIABILITY, ACTIVE OR PASSIVE NEGLIGENCE OF SCHLUTER-SYSTEMS, AND REGARDLESS OF THE LEGAL THEORY (CONTRACT OR TORT OR EXTRA-CONTRACTUAL OR OTHER), NOR FROM ACTS OF WAR, TERRORISM, FAULTY AND NEGLIGENT PENETRATION OF THE SYSTEM, FIRES, EXPLOSIONS, ACTS OF GOD, INTENTIONAL ACTS OF DESTRUCTION OR ANY LOSSES DUE TO STRUCTURAL FAILURE OR OTHER CAUSES UNRELATED TO THE PRODUCT OR DELAYS, OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES. THIS WARRANTY IS GIVEN IN LIEU OF ANY OTHER WARRANTY EXPRESSED OR IMPLIED. THE REMEDIES CONTAINED HEREIN ARE THE ONLY REMEDIES AVAILABLE FOR BREACH OF THIS WARRANTY. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS; SOME STATES AND PROVINCES DO NOT ALLOW DISCLAIMERS OR OTHER RESTRICTIONS OF IMPLIED WARRANTIES, SO SOME OF THE ABOVE DISCLAIMERS MAY NOT APPLY TO YOU.

TRANSFERABILITY: This Limited Warranty extends ONLY to the original end user (defined as original intended owner and user of the property/unit in which the installation is incorporated - herein referred to as "Owner") and is not transferable or assignable, unless approved in writing by the Technical Director or an Officer of Schluter-Systems or otherwise prohibited by specific state or provincial law.

MODIFICATIONS TO WARRANTY: No changes or modification of any terms or conditions of this warranty are allowed unless authorized by written agreement and signed by the Technical Director or an Officer of Schluter-Systems.

EFFECTIVE DATE: This warranty shall supersede and replace any and all prior oral or written warranties, agreements, or other such representations made by or on behalf of Schluter-Systems relative to the Product or the application of the Product and shall apply to any installation occurring on or after January 1, 2013.

CLAIMS ON THIS LIMITED WARRANTY: To make a claim under this Limited Warranty, the Owner must provide Schluter-Systems with written notice within 30 days of any alleged defect in the Product covered by this Limited Warranty, together with date and proof of purchase of the Product, proof of the costs of the original installation and name and address of all installers, failing which this Limited Warranty shall be of no legal effect. Schluter-Systems reserves the right at its election and as a condition of this Limited Warranty to inspect the alleged failed and defective condition.

All U.S. Claims shall be sent to:

Schluter Systems L.P.
Attn: Warranty Claims Dept.
194 Pleasant Ridge Road
Plattsburgh, NY 12901-5841

All Canadian Claims shall be sent to:

Schluter Systems (Canada), Inc.
Attn: Warranty Claims Dept.
21100 chemin Ste-Marie
Ste-Anne-de-Bellevue, QC H9X 3Y8

*For the purpose of this warranty **Schluter Systems, L.P.** shall provide the warranty for all products for end users located in the United States, and **Schluter Systems (Canada) Inc.** shall provide the warranty for all products for end users located in Canada. This warranty is limited to sales of the Product made in and intended for use in the United States and Canada.

VersaBond® Professional Thin-Set Mortar

1 Product Name

VersaBond® Professional Thin-Set Mortar

2 Manufacturer

Custom Building Products
 Technical Services
 10400 Pioneer Boulevard, Unit 3
 Santa Fe Springs, CA 90670
 Customer Support: 800-272-8786
 Technical Services: 800-282-8786
 Fax: 800- 200-7765
 Email: contactus@cbpmail.net
custombuildingproducts.com

3 Product Description

A professional formula, all-purpose mortar, polymer-modified to provide good bond strength for floor and tile projects. VersaBond® cures quickly even in cold climates and adheres to most surfaces, exceeding ANSI A118.4 and A118.11 without the need for additives.

Key Features

- For most standard installations
- Fast setting even in cold weather

Suitable Tile Types

- Vitreous, semi-vitreous or non-vitreous tile: ceramic, mosaic, quarry, cement body tile
- Impervious porcelain and glass tile
- Brick and thin brick
- Cement-based precast terrazzo
- Natural stone tile

Suitable Substrates

- Concrete, mortar beds, masonry, Portland cement plaster
- [WonderBoard® Lite cement backerboard](#)
- Liquid applied waterproofing membranes such as [RedGard®](#) and [Custom® 9240](#)
- Crack prevention sheet membranes such as [Crack Buster® Pro](#)
- Uncoupling membranes such as [RedGard® Uncoupling Mat](#)
- Surfaces treated with [MBP Multi-Surface Bonding Primer](#)
- Exterior Grade Plywood (interior residential and light commercial dry areas)
- Gypsum wallboard (interior dry areas)
- Existing ceramic tile (scarified)
- Fully-bonded sheet vinyl flooring (scarified)
- Plastic laminates (scarified)
- Cutback adhesive (see preparation instructions)

Composition of Product

VersaBond® Fortified Thin-Set Mortar is a dry, proprietary blend of Portland cement, copolymers, inorganic aggregates and chemicals



Benefits of Product in the Installation

- Cost-efficient, all-purpose mortar
- Good bond strength
- Cures quickly even in cold climates
- Approved for industry-recommended interior and exterior applications
- Exceeds ANSI A118.4 and A118.11 standards without the need for additives

Limitations to the Product

- Do not bond directly to hardwood, Luan plywood, particle board, parquet, cushion or sponge-back vinyl flooring, metal, fiberglass, plastic or OSB panels.
- Not recommended for interior and exterior pools and water features. CUSTOM recommends [MegaLite® Crack Prevention Mortar](#), [MegaFlex® Crack Prevention Mortar](#) and [ProLite® Large Tile and Stone Mortar](#) for the installation of ceramic and porcelain tile in submerged applications. For additional information, contact Custom Technical Services.
- When setting moisture sensitive natural stone, cement or agglomerate tile use [EBM-Lite™ Epoxy Bonding Mortar 100% Solids](#) or [CEG-Lite™ 100% Solids Commercial Epoxy Grout](#).
- Do not use to install resin-backed stone; use [EBM-Lite™ Epoxy Bonding Mortar 100% Solids](#), [CEG-Lite™ 100% Solids Commercial Epoxy Grout](#) or contact Custom's® Technical Services for recommendations.
- For clear or translucent glass, CUSTOM recommends [Glass Tile Premium Thin-Set Mortar](#). When setting glass tile larger than 6" x 6" (15 x 15 cm), contact Custom's® Technical Services for recommendations.
- When setting dimensional stone larger than 12" x 12" (30 x 30 cm), contact Custom's® Technical Services for recommendations regarding subfloor deflection requirements.

Packaging

- 50 lb (22.68 kg) and 25 lb (11.34 kg) bags
- Gray or white



VersaBond® Professional Thin-Set Mortar

4 Technical Data

Applicable Standards

American National Standards Institute (ANSI) — ANSI A108.5, A118.4 and A118.11 of the American National Standards for the Installation of Ceramic Tile ASTM International (ASTM)

- ASTM C109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in or [50-mm] Cube Specimens)
- ASTM C627 Standard Test Method for Evaluating Ceramic Floor Tile Installation Systems Using the Robinson-Type Floor Tester

Resilient Floor Covering Institute - (RFCI) Recommended Work Practices for Removal of Resilient Floor Coverings
Tile Council of North America (TCNA) - TCNA Handbook for Ceramic Tile Installation, TCNA Method EJ171
ISO 13007-2

Technical Chart

Property	Test Method	Requirement	Typical Results
Pot Life			4 Hours
Open Time	A118.4 Section 5.3	> 20 minutes	Pass
4 Week Shear Bond Strength			
Glazed Wall Tile	A118.4 Section 5.1.5	> 300 psi	450 - 550 psi (31.6 - 38.7 kg/cm ²)
Porcelain Tile	A118.4 Section 5.2.4	> 200 psi	300 - 400 psi (21.1 - 28.1 kg/cm ²)
Quarry Tile to Plywood	A118.11 Section 4.1.2	> 150 psi	150 - 250 psi (10.5 - 17.6 kg/cm ²)

Environmental Consideration

Custom® Building Products is committed to environmental responsibility in both products produced and in manufacturing practices. Use of this product can contribute towards LEED® v3 certification:

- Up to 2 points towards MR Credit 5, Regional Materials
- Up to 2 points towards MR Credit 4, Recycled Content
- Up to 1 point towards IEQ Credit 4.1, Low-Emitting Materials – Adhesives & Sealants

5 Instructions

General Surface Prep

USE CHEMICAL-RESISTANT GLOVES, such as nitrile, when handling product.

Surfaces must be structurally sound. Remove all grease, oil, dirt, curing compounds, sealers, adhesives or any other contaminant that would prevent a good bond. Glossy or painted surfaces must be sanded, or abraded, and stripped of all contaminants. Concrete must be cured 28 days and accept water penetration. Concrete must be free of efflorescence and not subject to hydrostatic pressure. Concrete slabs should have a coarse finish to enhance the bond. Plywood flooring including those under resilient flooring must be structurally sound and meet all ANSI and deflection requirements. For questions about proper subfloor installation, call Technical Services. Smooth concrete surfaces, existing glazed tile, terrazzo, or polished stone should be scarified. Sheet vinyl must be well bonded and stripped of old finish. Roughen the surface by sanding or abrading, then rinse and allow to dry. Expansion joints should never be bridged with setting material. Do not sand flooring materials containing asbestos. **Ambient temperature should be maintained above 50° F (10° C) or below 100° F (38° C) for 72 hours to achieve proper bond.**

Bonding to Concrete Surfaces

Concrete or plaster must be fully cured and must accept water penetration. Test by sprinkling water on various areas of the substrate. If water penetrates, then a good bond can be achieved; if water beads, surface contaminants are present, and loss of adhesion may occur. Contaminants should be mechanically removed before installation. Concrete must be free of efflorescence and not subject to hydrostatic pressure. Concrete slabs should have a coarse finish to enhance the bond. Smooth concrete slabs must be mechanically abraded to achieve proper bond.

Bonding to Lightweight Cement and Gypsum Surfaces

Lightweight or gypsum based underlayments must obtain a minimum 2000 psi (13.8 MP) compressive strength. The underlayment must be sufficiently dry and properly cured to the manufacturer's specifications for permanent, non-moisture permeable coverings. Surfaces to be tiled must be structurally sound and subject to deflection not to exceed the current ANSI Standards. Surfaces shall be free of all grease, oil, dirt, dust, curing compounds, waxes, sealers, efflorescence, or any other foreign matter.

All Lightweight cement or Gypsum surfaces should be primed with a properly applied sealer or a primer coat of [RedGuard](#), consisting of 1 part RedGuard diluted with 4 parts clean, cool water. Mix in a clean bucket at low speed to obtain a lump free solution. The primer can be brushed, rolled or sprayed to achieve an even coat. Apply the primer coat to the floor at a rate of 300 sq. ft./l (7.5 sq. m/L). Drying time depends on site conditions, but is normally less than 1 hour. Extremely porous surfaces may require 2 coats. At this point, RedGuard can be applied to the primed lightweight or gypsum based surface. Refer to the individual product data sheet or packaging directions for application instructions. Expansion joints must be installed in accordance with local building codes and ANSI/TCNA guidelines. Refer to TCNA EJ171.

Bonding to Plywood Surfaces

Plywood floors, including those under resilient flooring, must be structurally sound and must meet all ANSI A108.01 Part 3.4 requirements. Maximum allowable deflection: L/360 tile L/720 stone. See TCNA F150-13 Tile Installations, TCNA F141-13 and F250-13 for Stone. For questions about proper subfloor installation requirements, call Custom technical services.



VersaBond® Professional Thin-Set Mortar

Bonding to Backerboards

As an alternative to an additional layer of plywood, WonderBoard backerboard may be installed over plywood subfloors for ceramic tile installations. Refer to TCNA F144-13 tile installations, TCNA F250-13 stone installations. Call Custom technical services when installing natural stone over plywood subfloor.

Bonding to Existing Surfacing Material

Existing Ceramic Tile, Resilient Flooring or Plastic Laminates: Resilient flooring or plastic laminates must be well bonded, as well as clean and free of all contaminants. Roughen the surface by sanding or scarifying; rinse and allow to dry. Do not sand flooring that contains asbestos. For existing well bonded ceramic tile, mechanically abrade the surface. Rinse and allow to dry. When sanding, an approved respirator should be used.

Bonding to Cutback Adhesive

Adhesive layers must be removed, as they reduce mortar bond strength to cement surfaces. Use extreme caution; adhesives may contain asbestos fibers. Do not sand or grind adhesive residue, as harmful dust may result. Never use adhesive removers or solvents, as they soften the adhesive and may cause it to penetrate into the concrete. Adhesive residue must be wet scraped to the finished surface of the concrete, leaving only the transparent staining from the glue. To determine desirable results, do a test bond area before starting. Refer to the RFCI Pamphlet, "Recommended Work Practices for Removal of Resilient Floor Coverings" for further information.

Movement Joint Placement

Movement joints are required for perimeters and other changes of plane in all installations. Expansion joints and cold joints, as described in ANSI A108.01, should never be bridged with setting material. They must be brought through the tile work and filled with an appropriate elastomeric sealant, such as [Custom's 100% Silicone](#). Contact Custom's Technical Services for the proper treatment of control or saw cut joints. Refer to TCNA EJ171, F125 & F125A.

Mixing Ratios

Mix 6 qts (5.68 L) clean water per 50 lb (22.68 kg) bag of mortar.

Mixing Procedures

Mix by hand or use a low 150 – 200 rpm speed 1/2" (13 mm) drill to achieve a smooth, paste-like consistency. Let the mixture slake or stand 5 – 10 minutes; stir again and use. Stir occasionally, but do not add more water. When properly mixed, troweled ridges will stand without slump.

Application of Product

Installation must conform to ANSI A108.5. Use a properly-sized notch trowel to ensure proper coverage under tiles. Using the flat side of the trowel, apply a skim coat of mortar to the surface. With the notch side of the trowel held at a 45° angle, apply additional mortar to the surface, combing in one direction. Press the tile firmly into place in a perpendicular motion across ridges, moving back and forth. The perpendicular motion flattens ridges and closes valleys, allowing maximum coverage. With some tile, back-buttering is advisable. Adjust the tile promptly and beat it in with a beating block and rubber mallet. Mortar can be applied up to 1/4" (6 mm) thick after beat in. Periodically pull up a tile and check the back to ensure proper adhesive coverage. If the material has skinned over (not sticky to the touch), recomb with the notch trowel; if too dry, remove and replace the dry material with fresh material. Material in the bucket will remain workable for approximately 4 hours.

Curing of Product

Curing time is affected by ambient and surface temperatures and humidity. Use the following as a guideline. Allow 24 hours before grouting and light traffic, and 7-10 days before heavy or vehicular traffic. Before exposure to heavy or vehicular traffic, assure assembly is rated "Heavy or Extra Heavy" per TCNA Service Requirements. As necessary, use plywood or other load distributing protection when moving heavy equipment across tiled assembly.

Cleaning of equipment

Clean with water before the material dries.

Storage

Store in a cool dry area.

Health Precautions

This product contains Portland cement and free silica. Avoid eye contact or prolonged contact with skin. Wash thoroughly after handling. If eye contact occurs, flush with water for 15 minutes and consult a physician. Do not breathe dust; wear a NIOSH approved respirator.

Conformance to Building Codes

Installation must comply with the requirements of all applicable local, state and federal code jurisdictions.

6 Availability & Cost

Location	Item Code	Size	Color	Package
USA	MTSG25	25 lb (11.34 kg)	Gray	Bag
USA	MTSG50	50 lb (22.68 kg)	Gray	Bag
USA	MTSW50	50 lb (22.68 kg)	White	Bag
Canada	CVBG50	50 lb (22.68 kg)	Gray	Bag
Canada	CVBW50	50 lb (22.68 kg)	White	Bag



CUSTOM®

VersaBond® Professional Thin-Set Mortar

7 Product Warranty

Obtain the applicable **LIMITED PRODUCT WARRANTY** at www.custombuildingproducts.com/product-warranty or send a written request to Custom Building Products, Inc., Five Concourse Parkway, Atlanta, GA 30328, USA. Manufactured under the authority of Custom Building Products, Inc. © 2017 Quikrete International, Inc.

When VersaBond® Fortified Thin-Set Mortar is used as a part of a qualifying full installation system of CUSTOM products, the installation can qualify for up to a 10 year system warranty. CUSTOM will repair and/or replace, at its discretion, the affected area of the system. For more information, find details and limitations to this warranty at custombuildingproducts.com.

8 Product Maintenance

Properly installed product requires no special maintenance.

9 Technical Services Information

For technical assistance, contact Custom technical services at 800-282-8786 or visit custombuildingproducts.com.

10 Filing System

Additional product information is available from the manufacturer upon request.

Expected Wear

Properly installed tile will last for more than 60 years.

Related Products

Polyblend® Sanded Grout



VersaBond® Professional Thin-Set Mortar

Coverage

SQUARE FOOT COVERAGE PER 50 LB BAG (SQUARE METER PER 22.68 KG)

Trowel Size	Min Coverage	Max Coverage
Longest side of tile less than 8" use 1/4" x 1/4" x 1/4" (6 x 6 x 6 mm) Square-Notch	85 sq. ft. (8.8 M ²)	95 sq. ft. (8.8 M ²)
Longest side of tile 8" to 15" use 1/4" x 3/8" x 1/4" (6 x 9.5 x 6 mm) Square-Notch	60 sq. ft. (5.6 M ²)	67 sq. ft. (6.2 M ²)

Recommended minimum coverage (80% for dry areas and 95% for wet areas and exteriors). Back buttering may be necessary.

Note that mortar coverage does not include backbuttering tiles. When backbuttering, consider the tile underside pattern and depth to estimate thickness and usage to add to your estimate.

Chart for estimating purposes. Coverage may vary based on installation practices and jobsite conditions. For more sizes, use the material calculator at CustomBuildingProducts.com or contact CUSTOM Technical Services at 800-282-8786.



APPENDIX F
PCB ANALYTICAL RESULTS



Thursday, September 16, 2021

Attn: Mr. Chris Slagle
Adelaide Environmental Health Assoc, Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Project ID: SUCF 081058 MDS 21250+00-IN
SDG ID: GCJ26186
Sample ID#s: CJ26186 - CJ26193

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.

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
UT Lab Registration #CT00007
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

September 16, 2021

SDG I.D.: GCJ26186

Project ID: SUCF 081058 MDS 21250+00-IN

Client Id	Lab Id	Matrix
1 HAB ELEVATOR MER 1 + 2	CJ26186	OIL
2 SUB ELEVATOR MER 3 + 5	CJ26187	OIL
3 SAB ELEVATOR #9 MER	CJ26188	OIL
4 CSB ELEVATOR MER	CJ26189	OIL
5 LHB ELEVATOR MER #8	CJ26190	OIL
6 STL EAST ELEVATOR MER 3	CJ26191	OIL
7 STL WEST ELEVATOR MER 2	CJ26192	OIL
8 STL MAIN ELEVATOR MER 1	CJ26193	OIL



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



Analysis Report

September 16, 2021

FOR: Attn: Mr. Chris Slagle
Adelaide Environmental Health Assoc, Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information

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

Custody Information

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

Date

09/08/21

Time

8:30

09/10/21

16:47

Laboratory Data

SDG ID: GCJ26186
Phoenix ID: CJ26186

Project ID: SUCF 081058 MDS 21250+00-IN
Client ID: 1 HAB ELEVATOR MER 1 + 2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Waste Dilution PCB	Completed				09/10/21	O/O	SW3580A
<u>Polychlorinated Biphenyls</u>							
PCB-1016	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1221	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1232	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1242	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1248	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1254	2.9	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1260	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1262	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1268	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
<u>QA/QC Surrogates</u>							
% DCBP	77		%	1	09/13/21	SC	30 - 150 %
% DCBP (Confirmation)	62		%	1	09/13/21	SC	30 - 150 %
% TCMX	76		%	1	09/13/21	SC	30 - 150 %
% TCMX (Confirmation)	78		%	1	09/13/21	SC	30 - 150 %

Client ID: 1 HAB ELEVATOR MER 1 + 2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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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:**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.

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

September 16, 2021

Reviewed and Released by: Rashmi Makol, Project Manager



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



Analysis Report

September 16, 2021

FOR: Attn: Mr. Chris Slagle
Adelaide Environmental Health Assoc, Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information

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

Custody Information

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

Date	Time
09/08/21	9:40
09/10/21	16:47

Laboratory Data

SDG ID: GCJ26186
Phoenix ID: CJ26187

Project ID: SUCF 081058 MDS 21250+00-IN
Client ID: 2 SUB ELEVATOR MER 3 + 5

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Waste Dilution PCB	Completed				09/10/21	O/O	SW3580A

Polychlorinated Biphenyls

PCB-1016	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1221	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1232	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1242	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1248	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1254	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1260	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1262	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1268	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A

QA/QC Surrogates

% DCBP	82	%	1	09/13/21	SC	30 - 150 %
% DCBP (Confirmation)	69	%	1	09/13/21	SC	30 - 150 %
% TCMX	80	%	1	09/13/21	SC	30 - 150 %
% TCMX (Confirmation)	80	%	1	09/13/21	SC	30 - 150 %

Client ID: 2 SUB ELEVATOR MER 3 + 5

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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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:**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.

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Phyllis Shiller, Laboratory Director

September 16, 2021

Reviewed and Released by: Rashmi Makol, Project Manager



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



Analysis Report

September 16, 2021

FOR: Attn: Mr. Chris Slagle
Adelaide Environmental Health Assoc, Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information

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

Custody Information

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

Date

09/08/21

Time

10:18

09/10/21

16:47

Laboratory Data

SDG ID: GCJ26186
Phoenix ID: CJ26188

Project ID: SUCF 081058 MDS 21250+00-IN
Client ID: 3 SAB ELEVATOR #9 MER

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Waste Dilution PCB	Completed				09/10/21	O/O	SW3580A

Polychlorinated Biphenyls

PCB-1016	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1221	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1232	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1242	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1248	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1254	1.6	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1260	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1262	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A
PCB-1268	ND	0.98	mg/kg	1	09/13/21	SC	SW8082A

QA/QC Surrogates

% DCBP	85	%	1	09/13/21	SC	30 - 150 %
% DCBP (Confirmation)	72	%	1	09/13/21	SC	30 - 150 %
% TCMX	77	%	1	09/13/21	SC	30 - 150 %
% TCMX (Confirmation)	80	%	1	09/13/21	SC	30 - 150 %

Client ID: 3 SAB ELEVATOR #9 MER

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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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:**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.

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Phyllis Shiller, Laboratory Director

September 16, 2021

Reviewed and Released by: Rashmi Makol, Project Manager



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



Analysis Report

September 16, 2021

FOR: Attn: Mr. Chris Slagle
Adelaide Environmental Health Assoc, Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information

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

Custody Information

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

Date

09/08/21
09/10/21

Time

13:35
16:47

Laboratory Data

SDG ID: GCJ26186
Phoenix ID: CJ26189

Project ID: SUCF 081058 MDS 21250+00-IN
Client ID: 4 CSB ELEVATOR MER

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Waste Dilution PCB	Completed				09/10/21	O/O	SW3580A

Polychlorinated Biphenyls

PCB-1016	ND	0.94	mg/kg	1	09/13/21	SC	SW8082A
PCB-1221	ND	0.94	mg/kg	1	09/13/21	SC	SW8082A
PCB-1232	ND	0.94	mg/kg	1	09/13/21	SC	SW8082A
PCB-1242	ND	0.94	mg/kg	1	09/13/21	SC	SW8082A
PCB-1248	ND	0.94	mg/kg	1	09/13/21	SC	SW8082A
PCB-1254	ND	0.94	mg/kg	1	09/13/21	SC	SW8082A
PCB-1260	ND	0.94	mg/kg	1	09/13/21	SC	SW8082A
PCB-1262	ND	0.94	mg/kg	1	09/13/21	SC	SW8082A
PCB-1268	ND	0.94	mg/kg	1	09/13/21	SC	SW8082A

QA/QC Surrogates

% DCBP	84	%	1	09/13/21	SC	30 - 150 %
% DCBP (Confirmation)	74	%	1	09/13/21	SC	30 - 150 %
% TCMX	75	%	1	09/13/21	SC	30 - 150 %
% TCMX (Confirmation)	74	%	1	09/13/21	SC	30 - 150 %

Client ID: 4 CSB ELEVATOR MER

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL

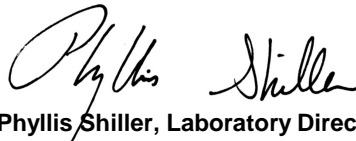
BRL=Below Reporting Level L=Biased Low

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:**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.

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Phyllis Shiller, Laboratory Director

September 16, 2021

Reviewed and Released by: Rashmi Makol, Project Manager



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



Analysis Report

September 16, 2021

FOR: Attn: Mr. Chris Slagle
Adelaide Environmental Health Assoc, Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information

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

Custody Information

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

Date

09/09/21
09/10/21

Time

7:08
16:47

Laboratory Data

SDG ID: GCJ26186
Phoenix ID: CJ26190

Project ID: SUCF 081058 MDS 21250+00-IN
Client ID: 5 LHB ELEVATOR MER #8

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Waste Dilution PCB	Completed				09/10/21	O/O	SW3580A

Polychlorinated Biphenyls

PCB-1016	ND	0.99	mg/kg	1	09/14/21	SC	SW8082A
PCB-1221	ND	0.99	mg/kg	1	09/14/21	SC	SW8082A
PCB-1232	ND	0.99	mg/kg	1	09/14/21	SC	SW8082A
PCB-1242	ND	0.99	mg/kg	1	09/14/21	SC	SW8082A
PCB-1248	ND	0.99	mg/kg	1	09/14/21	SC	SW8082A
PCB-1254	1.0	0.99	mg/kg	1	09/14/21	SC	SW8082A
PCB-1260	ND	0.99	mg/kg	1	09/14/21	SC	SW8082A
PCB-1262	ND	0.99	mg/kg	1	09/14/21	SC	SW8082A
PCB-1268	ND	0.99	mg/kg	1	09/14/21	SC	SW8082A

QA/QC Surrogates

% DCBP	92	%	1	09/14/21	SC	30 - 150 %
% DCBP (Confirmation)	93	%	1	09/14/21	SC	30 - 150 %
% TCMX	79	%	1	09/14/21	SC	30 - 150 %
% TCMX (Confirmation)	80	%	1	09/14/21	SC	30 - 150 %

Client ID: 5 LHB ELEVATOR MER #8

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL

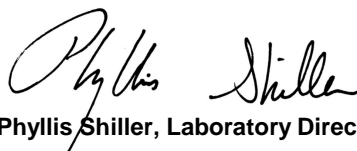
BRL=Below Reporting Level L=Biased Low

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:**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.

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Phyllis Shiller, Laboratory Director

September 16, 2021

Reviewed and Released by: Rashmi Makol, Project Manager



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



Analysis Report

September 16, 2021

FOR: Attn: Mr. Chris Slagle
Adelaide Environmental Health Assoc, Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information

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

Custody Information

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

Date

09/09/21
09/10/21

Time

8:18
16:47

Laboratory Data

SDG ID: GCJ26186
Phoenix ID: CJ26191

Project ID: SUCF 081058 MDS 21250+00-IN
Client ID: 6 STL EAST ELEVATOR MER 3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Waste Dilution PCB	Completed				09/10/21	O/O	SW3580A

Polychlorinated Biphenyls

PCB-1016	ND	0.98	mg/kg	1	09/14/21	SC	SW8082A
PCB-1221	ND	0.98	mg/kg	1	09/14/21	SC	SW8082A
PCB-1232	ND	0.98	mg/kg	1	09/14/21	SC	SW8082A
PCB-1242	ND	0.98	mg/kg	1	09/14/21	SC	SW8082A
PCB-1248	ND	0.98	mg/kg	1	09/14/21	SC	SW8082A
PCB-1254	ND	0.98	mg/kg	1	09/14/21	SC	SW8082A
PCB-1260	ND	0.98	mg/kg	1	09/14/21	SC	SW8082A
PCB-1262	ND	0.98	mg/kg	1	09/14/21	SC	SW8082A
PCB-1268	ND	0.98	mg/kg	1	09/14/21	SC	SW8082A

QA/QC Surrogates

% DCBP	129	%	1	09/14/21	SC	30 - 150 %
% DCBP (Confirmation)	Interference	%	1	09/14/21	SC	30 - 150 %
% TCMX	98	%	1	09/14/21	SC	30 - 150 %
% TCMX (Confirmation)	112	%	1	09/14/21	SC	30 - 150 %

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

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Phyllis Shiller, Laboratory Director

September 16, 2021

Reviewed and Released by: Rashmi Makol, Project Manager



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



Analysis Report

September 16, 2021

FOR: Attn: Mr. Chris Slagle
Adelaide Environmental Health Assoc, Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information

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

Custody Information

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

Date

09/09/21
09/10/21

Time

9:40
16:47

Laboratory Data

SDG ID: GCJ26186
Phoenix ID: CJ26192

Project ID: SUCF 081058 MDS 21250+00-IN
Client ID: 7 STL WEST ELEVATOR MER 2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Waste Dilution PCB	Completed				09/10/21	O/O	SW3580A

Polychlorinated Biphenyls

PCB-1016	ND	0.96	mg/kg	1	09/13/21	SC	SW8082A
PCB-1221	ND	0.96	mg/kg	1	09/13/21	SC	SW8082A
PCB-1232	ND	0.96	mg/kg	1	09/13/21	SC	SW8082A
PCB-1242	ND	0.96	mg/kg	1	09/13/21	SC	SW8082A
PCB-1248	ND	0.96	mg/kg	1	09/13/21	SC	SW8082A
PCB-1254	ND	0.96	mg/kg	1	09/13/21	SC	SW8082A
PCB-1260	ND	0.96	mg/kg	1	09/13/21	SC	SW8082A
PCB-1262	ND	0.96	mg/kg	1	09/13/21	SC	SW8082A
PCB-1268	ND	0.96	mg/kg	1	09/13/21	SC	SW8082A

QA/QC Surrogates

% DCBP	84	%	1	09/13/21	SC	30 - 150 %
% DCBP (Confirmation)	65	%	1	09/13/21	SC	30 - 150 %
% TCMX	83	%	1	09/13/21	SC	30 - 150 %
% TCMX (Confirmation)	78	%	1	09/13/21	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:

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.

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Phyllis Shiller, Laboratory Director

September 16, 2021

Reviewed and Released by: Rashmi Makol, Project Manager



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



Analysis Report

September 16, 2021

FOR: Attn: Mr. Chris Slagle
Adelaide Environmental Health Assoc, Inc
1511 Route 22, Suite C24
Brewster, NY 10509

Sample Information

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

Custody Information

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

Date

09/09/21
09/10/21

Time

10:50
16:47

Laboratory Data

SDG ID: GCJ26186
Phoenix ID: CJ26193

Project ID: SUCF 081058 MDS 21250+00-IN
Client ID: 8 STL MAIN ELEVATOR MER 1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Waste Dilution PCB	Completed				09/10/21	O/O	SW3580A
<u>Polychlorinated Biphenyls</u>							
PCB-1016	ND	1.0	mg/kg	1	09/13/21	SC	SW8082A
PCB-1221	ND	1.0	mg/kg	1	09/13/21	SC	SW8082A
PCB-1232	ND	1.0	mg/kg	1	09/13/21	SC	SW8082A
PCB-1242	ND	1.0	mg/kg	1	09/13/21	SC	SW8082A
PCB-1248	5.6	1.0	mg/kg	1	09/13/21	SC	SW8082A
PCB-1254	ND	1.0	mg/kg	1	09/13/21	SC	SW8082A
PCB-1260	ND	1.0	mg/kg	1	09/13/21	SC	SW8082A
PCB-1262	ND	1.0	mg/kg	1	09/13/21	SC	SW8082A
PCB-1268	ND	1.0	mg/kg	1	09/13/21	SC	SW8082A
<u>QA/QC Surrogates</u>							
% DCBP	77		%	1	09/13/21	SC	30 - 150 %
% DCBP (Confirmation)	65		%	1	09/13/21	SC	30 - 150 %
% TCMX	81		%	1	09/13/21	SC	30 - 150 %
% TCMX (Confirmation)	86		%	1	09/13/21	SC	30 - 150 %

Client ID: 8 STL MAIN ELEVATOR MER 1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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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:**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.

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Phyllis Shiller, Laboratory Director

September 16, 2021

Reviewed and Released by: Rashmi Makol, Project Manager



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



QA/QC Report

September 16, 2021

QA/QC Data

SDG I.D.: GCJ26186


Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 591517 (mg/kg), QC Sample No: CJ26191 (CJ26186, CJ26187, CJ26188, CJ26189, CJ26190, CJ26191, CJ26192, CJ26193)										
<u>Polychlorinated Biphenyls - Oil</u>										
PCB-1016	ND	0.95							40 - 140	30
PCB-1221	ND	0.95							40 - 140	30
PCB-1232	ND	0.95							40 - 140	30
PCB-1242	ND	0.95							40 - 140	30
PCB-1248	ND	0.95	98	96	2.1	79	79	0.0	40 - 140	30
PCB-1254	ND	0.95							40 - 140	30
PCB-1260	ND	0.95							40 - 140	30
PCB-1262	ND	0.95							40 - 140	30
PCB-1268	ND	0.95							40 - 140	30
% DCBP	122	%	125	133	6.2	99	96	3.1	30 - 150	30
% DCBP (Confirmation)	141	%	146	152	4.0	158	160	1.3	30 - 150	30 I,m
% TCMX	108	%	113	115	1.8	93	98	5.2	30 - 150	30
% TCMX (Confirmation)	113	%	120	122	1.7	118	111	6.1	30 - 150	30

I = This parameter is outside laboratory LCS/LCSD specified recovery limits.

m = This parameter is outside laboratory MS/MSD 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
September 16, 2021

Thursday, September 16, 2021

Criteria: None

State: NY

Sample Criteria Exceedances Report

GCJ26186 - ADELAIDE

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
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*** No Data to Display ***

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

September 16, 2021

SDG I.D.: GCJ26186

The following analysis comments are made regarding exceptions to criteria not already noted in the Analysis Report or QA/QC Report:

PCB Narration

AU-ECD5 09/14/21-1: CJ26190, CJ26191

The following Continuing Calibration compounds did not meet % deviation criteria:

Samples: CJ26190, CJ26191

Preceding CC 914A003 - DCBP SURR 17%H (15%)

Succeeding CC 914A021 - None.

AU-ECD6 09/13/21-1: CJ26186, CJ26187, CJ26188, CJ26189, CJ26192, CJ26193

The following Continuing Calibration compounds did not meet % deviation criteria:

Samples: CJ26186, CJ26188, CJ26189, CJ26192

Preceding CC 913B017 - None.

Succeeding CC 913B030 - PCB 1260 23%L (%)

Samples: CJ26187, CJ26193

Preceding CC 913B030 - PCB 1260 23%L (%)

Succeeding CC 913B038 - PCB 1260 23%L (%)



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NY Temperature Narration

September 16, 2021

SDG I.D.: GCJ26186

The samples in this delivery group were received at 2.2°C.
(Note acceptance criteria for relevant matrices is above freezing up to 6°C)

APPENDIX G
PERSONNEL AND LABORATORY CERTIFICATIONS

New York State – Department of Labor

Division of Safety and Health
License and Certificate Unit
State Campus, Building 12
Albany, NY 12240

ASBESTOS HANDLING LICENSE

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

Brewster, NY 10509

FILE NUMBER: 99-0656
LICENSE NUMBER: 29305
LICENSE CLASS: RESTRICTED
DATE OF ISSUE: 06/02/2021
EXPIRATION DATE: 07/31/2022

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

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, 2022

NAT-15081-2

Certification #

June 21, 2017

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



LOUIS N JOHNSON III
CLASS(EXPIRES)
C ATEC(06/22) D INSP(06/22)
E MGPL(06/22) H PM (06/22)
I PD (06/22)

CERT# 08-05954
DMV# 641924292

MUST BE CARRIED ON ASBESTOS PROJECTS



United States Environmental Protection Agency

This is to certify that



Jason P Fullum

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:

Risk Assessor

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 July 11, 2023

Susan Schulz, Acting Chief

Chemicals and Multimedia Programs Branch

LBP-R-12098-2

Certification #

May 07, 2020

Issued On



NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER



Expires 12:01 AM April 01, 2022
Issued April 01, 2021

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. PAUL J. MUCHA
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.: 63000

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER



Expires 12:01 AM April 01, 2022
Issued April 01, 2021

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 for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved subcategories and/or analytes are listed below:

Miscellaneous

Lead in Dust Wipes	EPA 6010C
	EPA 6010D
Lead in Paint	EPA 6010C
	EPA 6010D

Sample Preparation Methods

EPA 3050B
EPA 3051A

Serial No.: 62927

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.