SUCF PROJECT NO.: 071099-00

REPLACE STOREFRONT AND EXTERIOR DOORS -BARTLE LIBRARY, UNIVERSITY UNION, AND COUPER ADMINISTRATION BUILDING

STATE UNIVERSITY OF NEW YORK
BINGHAMTON UNIVERSITY

ADDENDUM NO. 2

August 20, 2026

PREPARED BY:

QUINLIVAN, PIERIK & KRAUSE A/E DBA QPK DESIGN

450 SOUTH SALINA STREET, 5TH FLOOR

SYRACUSE, NY 13201



The following additions, deletions, and/or changes or clarifications to the drawings, specifications, and bidding documents for this project, shall become and are hereby made part of the Contract Documents. They change the original documents only in the manner and to the extent stated. Each bidder shall acknowledge receipt of this Addendum in the appropriate location on the bid proposal form.

This addendum consists of 4 pages, and drawings and attachments.

1. GENERAL

1.1. PROJECT MANUAL

1.1.1. REPLACE 070199-00 SUNY Binghamton Replace Storefront & Exterior Doors project manual in its entirety. Changes are limited to the following:

1. REVISED manual includes revisions to individual specification sections as noted in Addendum No 1 and below.
2. REVISED manual includes addition of 071099-00 SUNY Binghamton Replace Available Project Information

1.1.2. 00 21 13 10 NOTICE TO BIDDERS

1. REMOVE Bid Date of August 26, 2026 and REPLACE with Bid Date of September 2, 2026.

2. SPECIFICATION CHANGES

2.1. 00 21 13 15 CONTRACTOR'S BID AND POST BID CHECKLIST

2.1.1. REMOVE specification section 00 21 13 15 CONTRACTOR'S BID AND POST BID CHECKLIST, June 2023 in its entirety and REPLACE with the attached revised specification section 00 21 13 15 CONTRACTOR'S BID AND POST BID CHECKLIST, August 2026.

2.2. 00 42 13 PROPOSAL

2.2.1. REMOVE and REPLACE "**ATTENTION BIDDERS: ALSO FULLY EXECUTE PAGES P-6, P-7, P-8, P-9, P-10, P-11, P-12 AND P-13**." Noted on page four with:

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

2.3. 01 11 00 DESCRIPTION OF WORK (SECTION A)

2.3.1. ADD Sub-paragraph 1.C.v. with the following:
"Install materials noted in contract documents to ensure a complete, fully functional, and operational system."

2.4. 01 11 13 COORDINATION WITH OTHER CONTRACTS

2.4.1. ADD 071108 Replace Roofs (Couper Administration) and 071123 Replace Pavers (University Union)

2.5. 01 26 43 AMENDMENT (SECTION E)

2.5.1. REMOVE and REPLACE Article 3 with the following:
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 / sole source shown in Specification Section 01 00 00 General Reference Documents, 7. Sole or Single Source Approval Request where the use of another product is not permitted."

"Building Management System (BMS) – Siemens."

2.6. 01 31 13 10 EXPLORATORY DEMOLITION

2.6.1. REMOVE Article 1, "Not Applicable" and REPLACE with revised Article 1 and 2 in the attached specification section 01 31 13 10 EXPLORATORY DEMOLITION.

2.7. 01 32 16 PROJECT SCHEDULE

2.7.1. In paragraph 1,c, REMOVE the underlined space and REPLACE with the word “monthly”.

2.8. 01 51 16 TEMPORARY FIRE PROTECTION

2.8.1. REMOVE 01 51 16 Article 4 in its entirety.

2.9. 01 52 13 FIELD OFFICE FOR THE CONSULTANT

2.9.1. REMOVE *“The Contractor shall coordinate the use of office or conference room space use with the campus as needed until all the Work covered by the Contract is accepted by the Fund.”*

REPLACE with *“Within two (2) weeks of receipt of the Notice to Proceed, provide for the services and new equipment listed below at the existing field office space used by the Site Representative(s).”*

2.10. 01 55 19 TEMPORARY PARKING

2.10.1. REMOVE Article 1 in its entirety and REPLACE it with the following:

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. 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.

a. Refer to Campus General Requirements for additional information.

2.11. 01 32 13 SPECIAL PROJECT SCHEDULE / PHASING

2.11.1. ADD Sub-paragraph 2, b, i, website link to the campus academic calendar: *“https://www.binghamton.edu/apps/calendar/”*

2.11.2. ADD Sub-paragraph 2, c, i, with the following:
“Coordinate the Construction Schedule and Project milestones with the Owner’s academic calendar. Schedule applicable Work to coincide with academic breaks and perform the Work in accordance with the phasing and sequencing requirements indicated on the Regulatory Drawings.”

2.12. 01 32 16 PROJECT SCHEDULE

2.12.1. ADD Article 1 and 2 with the attached revised specification.

2.13. 01 55 19 TEMPORARY PARKING

2.13.1. REVISE Article 1 with the following:
“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. 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.

a. Refer to Campus General Requirements for additional information.”

2.14. 02 82 00 ASBESTOS ABATEMENT

2.14.1. REVISE Paragraph 1.4, C. REMOVE the word, *“Company”,* and REPLACE with, *“QPK*

Design".

2.15. 08 11 16 INTERIOR ALUMINUM DOORS AND FRAMES

2.15.1. REMOVE specification section 08 11 16 INTERIOR ALUMINUM DOORS AND FRAMES, in its entirety and REPLACE with the attached revised specification section 08 11 16 INTERIOR ALUMINUM DOORS AND FRAMES, DATED 8/20/26

2.16. 08 41 13 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

2.16.1. REMOVE specification section 08 41 13 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS, in its entirety and REPLACE with the attached revised specification section 08 41 13 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS, DATED 8/20/26

2.17. 08 71 00 DOOR HARDWARE

2.17.1. REMOVE specification section 08 71 00 DOOR HARDWARE, in its entirety and REPLACE with the attached revised specification section 08 71 00 DOOR HARDWARE, DATED 8/20/26

2.17.2. Changes made to sub-paragraph 2.4.b-e Junction box requirements.

3. DRAWING REVISIONS

3.1. L-002 - SITE ACCESS AND STAGING PLAN

3.1.1. REMOVE drawing sheet L-002 – SITE ACCESS AND STAGING PLAN, in its entirety and REPLACE with the attached revised drawing sheet L-002 –SITE ACCESS AND STAGING PLAN, dated 08/18/26, REV 1 - ADDENDUM NO. 2

3.2. L-101A – LAYOUT PLAN – COUPER ADMINISTRATION

3.2.1. REMOVE drawing sheet L-101A – LAYOUT PLAN – COUPER ADMINISTRATION, in its entirety and REPLACE with the attached revised drawing sheet L-101A – LAYOUT PLAN – COUPER ADMINISTRATION, dated 08/10/26, REV 1 - ADDENDUM NO. 2

3.3. A-103B – FLOOR PLAN – FIRST AND SECOND FLOOR – BARTLE LIBRARY

3.3.1. Keyed note 42 shall be revised. The words "window blind" shall be change to "roller shade".

3.4. HM-101B –ABATEMENT PLAN – PARTIAL FIRST FLOOR- BARTLE LIBRARY - NORTH

3.4.1. REMOVE drawing sheet HM-101B –ABATEMENT PLAN – PARTIAL FIRST FLOOR- BARTLE LIBRARY - NORTH, in its entirety and REPLACE with the attached revised drawing sheet HM-101B –ABATEMENT PLAN – PARTIAL FIRST FLOOR- BARTLE LIBRARY - NORTH, dated 08/10/26, REV 1 - ADDENDUM NO. 2

4. ATTACHMENTS

4.1. Project Manual Div 00 – Div 33 with Additional Project Information
4.2. L-002 – SITE ACCESS AND STAGING PLAN
4.3. L-101A – LAYOUT PLAN – COUPER ADMINISTRATION
4.4. HM-101B – ABATEMENT PLAN – PARTIAL FIRST FLOOR – BARTLE LIBRARY – NORTH

Project Manual

PROJECT NO. 071099-00

PROJECT TITLE: Replace Storefront and Exterior Doors – Bartle Library, University Union, and Couper Administration Building

DATE: July 27, 2026

State University of New York
at
Binghamton

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

QPK Design Architecture Engineering Site + Planning
450 S. Salina St.
Suite 500, PO Box 29
Syracuse, NY 13201

Ryan Biggs | Clark Davis Engineering, D.P.C
1326 New Seneca Turnpike, Suite B3
Skaneateles, NY 13152

FS Engineering, DPC
721 E Genesee St.
Syracuse, NY 13210

Ravi Engineering & Land Surveying, P.C.
2110 S. Clinton Ave., Suite 1
Rochester, NY 14618

August 2020



QPK Design



Ryan Biggs | Clark Davis



VALID THRU: 01/31/2027
FS CERT. NO.: 0019642 FS EXP.: 01/31/2028

FS Engineering



Ravi Engineering

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Couper Administration

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LD-101A Demolition Plan- Couper Administration 07/27/26

Landscape
L-101A Layout Plan – Couper Administration 08/10/26
L-102A Grading and Drainage Plan- Couper Administration 07/27/26

Structural

S-101A	Plan and Details- Couper Administration Canopy Detail	07/27/26

Architectural Information

A-001A	Regulatory Plan- Ground and First Floor- Couper Administration	07/27/26
A-002A	Regulatory Plan- Second Floor- Couper Administration	07/27/26
A-003A	Door Signage- Couper Administration	07/27/26

Architectural Demolition

AD-101A	Removal Plan- First Floor & Removal RCP- Ground & First Floor - Couper Administration	07/27/26
AD-201A	Existing Conditions (For Reference) - Couper Administration	07/27/26

Architectural

A-101A	Floor Plan - First Floor & RCP- Ground & First Floor – Couper Administration	07/27/26
A-601A	Door Schedule and Door Details - Couper Administration	07/27/26
A-701A	Finish Plan - Admin Building - Couper Administration	07/27/26

Mechanical

M-101A	Floor Plan - First Floor - Couper Administration	07/27/26

Electrical

E-101A	Floor Plan - First Floor - Couper Administration	07/27/26
E-501A	Door Elevation Details - Couper Administration	07/27/26

Hazardous Materials

HM-101A	Abatement Plan- First Floor - Couper Administration	07/27/26

00 31 00 Available Project Information
(Refer to Section 2.12 of the Agreement regarding use of this information)

00 31 21 Survey Information
00 31 26 Existing Hazardous Material Information

STATE UNIVERSITY CONSTRUCTION FUND
NOTICE TO BIDDERS

The State University Construction Fund will receive sealed Proposals for Project No. 071099-00
Titled Replace Storefront and Exterior Doors – Bartle Library, University Union, Couper Administration Building at SUNY Binghamton until 2:00 p.m. Local Time on **September 2, 2026** at the Fund's Office at the H. Carl McCall SUNY Building, 353 Broadway, Albany, 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 by the Fund 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 the building. 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. 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**.** Bidders may at any earlier time send an email to modifymybid@suny.edu alerting the Fund of your intent to modify.

All work will be completed within **Nine Hundred (900)** 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% SDVOB. See Section 00 21 13 30 MWBE-SDVOB Utilization Plan Instructions dated Nov 2023. Utilization Plans shall be accepted in the ONLINE FORMAT ONLY using the Fund's web-based application; any other form of submittal will be rejected.

A pre bid conference and project walk through will be held on **August 3, 2026** with all contractors

assembled at **LI-1 entrance doors to Bartle Library** . For additional information, see Section 00 25 13 PreBid Meetings.

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: QPK Design Architecture Engineering Site + Planning
450 S. Salina St.
Suite 500,
Syracuse, NY 13201
Andrew Merriam – (315) 472-7806
amerriam@qpkdesign.com

Campus at which the work is to be performed:	Binghamton University 188 Bunn Hill Access Vestal, NY 13859 Cody Short – (607) 226-0359 Cshort1@binghamton.edu
Dodge Reports	Visit www.construction.com Email: support@construction.com
ConstructConnect	Visit www.cmdgroup.com. Email: content@constructconnect.com
Construction Journals	Visit www.constructionjournal.com
Eastern Contractors Association, Inc.	6 Airline Drive, Albany, NY 12205 www.ecainc.org
Syracuse Builders Exchange	6563 Ridings Road, Syracuse, NY 13206 www.syrabex.com
Builders Exchange of the Southern Tier	15 Belden Street, Binghamton, NY 13903 www.bxstier.com

Plans will be available on **July 27, 2026** from Plan & Print, 6160 Eastern Ave, Syracuse, NY 13211, (315-437-5111) (the Printer) in either electronic or paper format. Bidders will be able to access the project online at the Printer's web site:

http://planandprint.com/.

Click on "Plan Rooms", click on "**_Binghamton Univ. - Replace Storefront & Exterior Doors - Bartle Library, Univ. Union, Couper Admin_**" where information on the plans, specifications,
addenda and plan holders can be viewed.

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 Schedule A of Attachment A of the Construction Agreement. All insurance must be provided by companies approved by the Fund and be either licensed (admitted) by the New York State Department of Financial Services (NYS DFS) to issue insurance in the State of New York or authorized by NYS DFS and have an A.M. Best Company rating of "A-" Class "VII" or better. 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 https://sucf.suny.edu/sites/default/files/docs/BidandPostBidChecklist.pdf and download the "Bid and Post Bid Checklist" that gives bidders a one page summary of how to be prepared when 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, Jeremy Clausi, or Kelly Whitbeck.

SUCF.OpportunityAdmin@suny.edu for MWBE SDVOB issues only to contact the following person:
Scott Clay, Joanne Lovelady, and Joe Francis.

SUCF.Insurance@suny.edu for insurance issues only:
Jacqueline Maher and Danielle Ruchel.

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 web site:
  - https://apps.dos.ny.gov/publicInquiry/
- Be aware that all insurance must be provided by companies approved by the Fund, have an A.M. Best Company rating of "A-" Class "VII" or better, and such companies must be either 1) licensed by the New York State Department of Financial Services (NYS DFS) or 2) authorized by NYS DFS to issue insurance in the State of New York.
    - Please consult your insurance agent prior to bidding, who should be made aware of the requirements of Agreement Section 5.06 Insurance and Schedule A.
    - Certificates of Insurance must be in the formats required by Schedule A of Attachment A.
- 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 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.*

- 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 a Construction Schedule per Section 8(5) 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.

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 of information requested by the Fund or Consultant.

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.

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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 a Project Manual binding Bidding Documents, Contract Documents, and Technical 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 contain omissions, errors, 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) Prices inserted shall be in whole dollar amount but if cents are inserted, the Fund shall round the amount down to the nearest whole number. 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 at the time of bid. In addition, failure to include at the time of bid **a New York State Department of Labor ("DOL") Certificate of Registration ("Certificate of Registration") will result in the bid being rejected.**

a. 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. However, if a Proposal deposited with the Fund prior to the opening of bids is misplaced by the Fund and not opened by the Fund at the designated time of opening, then the Fund, in its sole discretion, may open such Proposal as soon as possible after the misplaced Proposal is discovered and confirmed to have been misplaced by the Fund. If the Fund decides to open such Proposal, the Fund will make reasonable attempts to notify the other bidders and allow such other bidders to view such opening by Webex or equivalent broadcast. Unopened Proposals will be returned to the bidder.

(7) Except as set forth herein, bids may be modified or withdrawn prior to the time of opening of bids as designated in the Bidding and Contract Documents only in writing or by email notice received by the Fund.

a. A written or email notice of modification or withdrawal 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 or withdrawal 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.

b. In the event an employee or courier of the bidder deposits the bidder’s Proposal on the day of the bid opening and subsequently asks for its return to make modifications prior to the designated time of opening, the Fund, in its sole discretion, may refuse to return a Proposal unless such employee or courier presents reasonable proof that he/she is duly authorized by the bidder and, if returned by the Fund, require that the Proposal be properly re-deposited with the Fund prior to the designated time of opening. The Fund accepts no

responsibility for Proposals returned to duly authorized employees or couriers that may subsequently be deposited after the designated time for opening or modified in an informal manner or modified in a manner not acceptable to the bidder.

(8) Except as set forth herein or as permitted by law and unless the Fund is of the opinion that it is in the public's best interest to permit the same, permission will not be given to modify, explain, or withdraw any Proposal or part thereof after the time designated in the Bidding and Contract Documents for the opening of bids.

(9) Withdrawal of Bid After the Bid Opening

a. Unless another time is permitted by the Fund in writing, within five (5) business days of the bid opening or of notification that the previous low bidder has been rejected or permitted to withdraw, a bidder may request, in writing by email to the Fund, the withdrawal of its bid on bidder's letterhead signed by a duly authorized representative of the bidder who signed the Proposal.
b. The Fund may conduct or have conducted a fact-finding proceeding to develop information concerning the request for withdrawal. A request for withdrawal of a bid made after the specified number of days allowed may result in forfeiture of the bid security.
c. Following a timely request for withdrawal of a bid, the bid security may be returned if the bidder establishes by credible evidence, including original documents when requested, the following:

    i. An error, clerical as opposed to judgmental in nature and verifiable by written evidence, occurred in the computation of the bid,
    ii. The error constitutes either an unintentional and substantial computational error or an unintentional omission of a substantial quantity of labor and/or material from the final bid computation,
    iii. Award of the contract to the bidder at the amount of the bid would cause financial hardship to the bidder,
    iv. Withdrawal of the bid is permitted by law or in the public's best interest, and
    v. The absence of gross negligence in the preparation of the bid. For the purposes of this subparagraph, gross negligence includes, but is not limited to: (1) the apparent failure of a bidder to account for two or more categories (divisions) of work; (2) the bidder's use of multiple erroneous quotations from subcontractors or suppliers; (3) the bidder's failure to obtain valid quotations from qualified subcontractors, suppliers, or insurance carriers; (4) the bidder's failure to properly account for the minimum qualifications of a bidder in Section 7 herein, or (5) submission

to the Fund of a bid withdrawal request within the preceding six (6) months or other period previously agreed to by the Fund and the bidder.

d. Required documentation in support of a request for withdrawal of bid includes, but is not limited to the following:

   i. A narrative that describes the sequence of events that led to submitting a purported errant proposal and the bidder's reasons for its request to withdraw the proposal
   ii. Take-off sheets, printed copies of electronic estimates, if applicable
   iii. Annotations on the bid documents to show where the purported error occurred (annotations can provide the narrative explanation of the purported error and how it occurred as indicated in item i. above)
   iv. Calculations for the bid as submitted compared with alternative calculations to the bid that eliminate the purported error
   v. Documentation demonstrating the financial impact to bidder to perform the project for the amount initially bid.

e. If the bidder fails to provide the necessary documentation or fails to meet its burden of proof, the Fund may deny the request to withdraw without penalty and find the bidder nonresponsive. The decision of the Fund shall be made in its sole discretion and shall be final and conclusive. The Fund will advise the bidder in writing of its determination. In the event the Fund denies the bidder's request to withdraw without penalty, the bidder's bid security may be forfeited and become the property of the Fund. At the discretion of the Fund, in lieu of forfeiture of bid security, the Fund may offer the bidder an alternate resolution as may be agreed to by the parties.

f. Once a request to withdraw is made, the bidder is ineligible for award. Upon receipt of a request to withdraw, the Fund shall continue to progress the award process considering only the remaining bids.

(10) Protesting the Bid Results after Bid Opening

Not more than ten (10) business days after the bid opening, a bidder may submit a written protest challenging the bid results following the procedure available on the Fund website at the following location:

https://sucf.suny.edu/sites/default/files/docs/ContractAwardProtestProcedure.pdf

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(s) 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.

a. Requests should be made as far in advance of, but not later than, the date and time scheduled for receipt of bids. In the judgment of the Fund, it may be impractical to address requests that are submitted too close to the bid opening date.
b. Requests for use of equivalent products shall comply with Section 2.20 of the Agreement.
c. Such interpretation or correction as well as any additional Contract provision(s) 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.
d. Such interpretation or correction or additional Contract provision(s) issued by Addendum may not satisfy a bidder's request nor result in Bidding and Contract Documents that are without ambiguity, inconsistency or error. Post bid, requests for interpretations or corrections may be made after execution of the Agreement in accordance with Section 01 26 13 Requests for Information of the General Requirements and Sections 1.06, 2.01, 2.02, and 2.08 of the Agreement.
e. 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.

a. Prospective bidders are warned that no trustee, officer, agent or employee of the Fund, Campus, 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.
b. The Fund has no obligation to provide responses.

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. Unit prices shall be calculated using the quantity and dollar amounts for the corresponding allowance shown in the Proposal.

a. In the event the Proposal contains blank spaces for unit prices or the Fund elects to adjust any unit price filled in by a bidder, the inserted or adjusted amount shall be agreeable to both the bidder and the Fund, or, in its sole discretion, the Fund may reject any unit prices.
b. In the case of rejection of unit prices by the Fund, the bidder acknowledges that the amount of work in the corresponding allowance shall be performed within the amount of its base bid.
c. If any unit price calculations shown in words and its equivalent shown in figures do not agree with the amounts shown for the corresponding allowance, the written words of the corresponding allowance shall be binding upon the bidder.
d. Unit prices will not be used to determine the low bidder.

(3) If alternates are included in the bidding documents, the Fund reserves the right to accept or reject any or all alternates.

a. The Fund shall determine the lowest bid by adding to or deducting from the Total Bids of the bidders, the additive or deductive alternates, if any, that the Fund elects to accept after the opening of the bids.
b. Alternates will be accepted in the order they are set forth in the Proposal.
c. Alternates, if any, are described in Section 01 23 00 (Section B) of the Technical Specifications.
d. Rejected alternates will not be used in combination with the Total Bid and other accepted alternates, if any, to determine the low bidder.
e. Alternates will be accepted or rejected at the sole and absolute discretion of the Fund.

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.

(4) Where the bidder was not responsive in providing the complete Post Bid Information required under Section 8 of the Information for Bidders within the time specified by the Fund and doesn't provide a reasonable extension of the 45-day award period, the Fund may reject the bid as nonresponsive and retain the bid security.

Section 7 Qualifications of Bidders

(1) A bidder must demonstrate, to the satisfaction of the Fund, that it has successfully completed, within the last ten (10) years, three (3) contracts similar in size, scope and complexity to this contract, one of which is a single bid contract as described in Section 14 where they were the prime contractor.

a. For scope and complexity, similar work is defined as multi-trade exterior renovations with site work on institutional buildings.
b. The details of the bidder's relevant contract experience shall be submitted on Attachment A of the Proposal, "List of Completed Similar Construction Contracts" (the List).

i. 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.
ii. 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.

c. The determination of relevant contract experience in terms of size, scope and complexity will be at the sole and absolute discretion of the Fund. In making its determination, evaluation of a bidder's experience may include, but is not limited to, the following:

i. Size may be evaluated by comparing the amount of the Total Bid to the dollar value of the bidder's relevant contract amounts with reasonable adjustments for cost changes over time and/or geographic location.
ii. Size may also be evaluated using other quantities such as area, volume of work completed, or other criteria determined by the Fund.
iii. The definition of completion of the relevant contracts shall be the date the contract was substantially completed and ready for its intended use as defined in Section 1.01 of the Agreement.
iv. Size and/or time limits may be relaxed approximately 5% for uncertainties related to the bid calculation and/or timing of the actual receipt of bids versus a completed relevant contract.
v. Scope and Complexity may be evaluated by comparing the scope of the work included in the Total Bid to the work in the bidder's relevant contracts. Similar work provides essentially the same intended work results as contemplated in the work included in the Total Bid. At the discretion of the Fund, similar work may reasonably differ in details of form of contract, timing, size, form, materials, methods, configuration, operation, appearance, and in other objective and aesthetic characteristics.
vi. The form of contract for the relevant contract(s) on the List shall be a single bid prime contract for all work, as defined in Section 14 of the Information for Bidders, or equivalent contract types in which the bidder can demonstrate that it performed work of essentially the same construction scope and complexity of the work bid.

(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/or 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 as 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)). 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, if not enrolled in VendRep, 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 o https://onlineservices.osc.state.ny.us/Enrollment/login?0. 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

Paper format CCA-2 will not be accepted from a bidder who is enrolled in VendRep.

b. Not used.

c. The names and addresses of the bidder's proposed subcontractor for the Asbestos Abatement and/or hazardous material removal 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. Such completed contracts shall include significant portions of self-performed work. The determination of relevant contract experience in terms of size, scope and complexity will be at the sole discretion of the Fund as described in Section 7(1)c above.

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 as described in Section 7(1)c above.
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. Paper format CCA-2 will not be accepted from a proposed subcontractor who is enrolled in VendRep.

vi. In the event that the Fund and the Consultant reject any of said proposed subcontractors or the bidder itself for any of such subcontract work, 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 evidence of their completed CCA-2.

vii. Where the bidder designated itself for any of the aforesaid categories of work and was approved by the Fund, the bidder will not be permitted to submit another proposed subcontractor for such categories of work except where its performance of such work meets a condition(s) set forth in Section 2.26 of the Construction Agreement as determined by the Fund.

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.

c. A breakdown of the amount of the bidder's Proposal. Such breakdown shall be prepared in accordance with the format included herein 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. The three lowest bidders will receive an email containing instructions and a hyperlink to follow to complete their Utilization Plan electronically via the Fund's online Utilization Plan application. Utilization Plans will only be accepted in this online format; any other form submittals will be rejected. The Utilization Plan shall include the subcontractor/supplier description of work, the estimated work schedule, and the estimated dollar value of subcontracts and

supply contracts that will be awarded to Service-Disabled Veteran-Owned Businesses.

(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. The three lowest bidders will receive an email containing instructions and a hyperlink to follow to complete their Utilization Plan electronically via the Fund's online Utilization Plan application. Utilization Plans will only be accepted in this online format; any other form submittals will be rejected. The Utilization Plan shall include the subcontractor/supplier description of work, the estimated work schedule, and the estimated dollar value of subcontracts and supply contracts that will be awarded to Minority and Women-owned Business Enterprises. 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) Within seven (7) calendar days after the opening of bids, submit a working plan and schedule showing the bidder's sequence logic for all significant activities and phases of the work from the anticipated start date to the substantial completion date in the bidder's Proposal. Use suitable charts, diagrams or bar graphs and show clearly, in sequence and timescale, all significant activities and phases with time estimates for each. If requested, revise the working plan and schedule until they are satisfactory to the Fund and the Consultant. This requirement is in addition to and not a substitute for the schedule requirements of Section 10 paragraph 1(c) herein or 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 or revise the working plan and schedule may result in the rejection of the Proposal as not responsive.

(6) 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 Total 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.

(2) The Field Order allowance may be reduced at the sole discretion of the Fund to a lower amount at the time of award of the contract.

(3) 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 information and/or data required with its Proposal and by 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.

(4) 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 past performance on completed contracts, business or technical organization, plant, financial and other sources of business experience compared with the work bid upon, justify rejection.

(5) 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 information and/or data submitted by the bidder with or after its Proposal is either adequate or suitable for the satisfactory performance of the work. As a condition of the award, the bidder agrees to preserve all estimates and documentation used to develop its Bid Proposal and produce the latter information for the Fund's examination upon

notice from the Fund prior to the Fund's approval of the Final Payment application required by the Contract.

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. 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.
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 appropriate Certificate of Liability Insurance Acord form, as well as the Acord 855, or other form acceptable to the Fund.

c. The 120-day Schedule required by the General Requirements, Special Conditions paragraph 01 32 16, titled "Project Schedule."

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 20 (10/10) 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 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 revised via the online Utilization Plan application and submitted to the Fund for review and approval. Business Partners can modify their Utilization Plans by visiting the Fund's website and following the instructions for the online Utilization Plan application.

ii. The Fund will review the submitted MWBE Utilization Plan and advise the bidder of the Fund's acceptance or issue a notice of deficiency within 20 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 MWBE 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”) and 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, gender identity or expression, 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.
a.

Section 12 Requirements and Procedures for Participation by New York State Certified Service-Disabled Veteran-Owned Business Enterprises ("SDVOBs")

(1) New York State Law

Pursuant to New York State Veterans' Service Law Article 3 and Parts 252.2 of Title 9 of the New York Codes, Rules and Regulations, the Fund is required to promote opportunities for the participation of New York State-certified Service-Disabled Veteran-Owned Business Enterprises in the performance of the Fund contracts to ensure progress toward the statewide %SDVOB Utilization goal of 3% established by Article 3 of the New York State Veterans' Services Law.

a. New York State Veterans' Services Law Article 3 acknowledges that 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 https://sdves.ogs.ny.gov/business-search

b. 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 also 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.

c. 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.

(2) Business Participation Opportunities for SDVOBs

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 Service-Disabled Veteran-Owned Businesses (SDVOB) (based on the current availability of SDVOBs).

A contractor ("Contractor") on any contract resulting from this procurement ("Contract") must document its good faith efforts to provide meaningful participation by SDVOBs 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 SDVOB documentation. A directory of SDVOBs can be viewed at: https://sdves.ogs.ny.gov/business-search. For guidance on how the Fund will evaluate a Contractor's "good faith efforts," refer to 9 NYCRR § 252.2 and Article IX, of the Agreement.

b. The bidder understands that only sums paid to SDVOBs for the performance of a commercially useful function, as that term is defined in 9 NYCRR § 252.2, may be applied towards the achievement of the applicable SDVOB participation goal. The portion of a contract with an SDVOB serving as a supplier that shall be deemed to represent the commercially useful function performed by the SDVOB shall be 100 percent of the total value of the contract.

c. In accordance with 9 NYCRR § 252.2 (s), the bidder further acknowledges that if it is found to have willfully and intentionally failed to comply with the SDVOB 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. Any contractor who willfully and intentionally fails to comply with the service-disabled veteran owned business participation requirements in accordance with 9 NYCRR § 252.2 (s) as set forth in such State contract shall be liable to the contracting agency for damages as otherwise specified in the contract and shall provide for other appropriate remedies on account of such breach. Damages shall be calculated based on the actual cost incurred by the State agency related to the State agency's expenses for personnel, supplies and overhead related to establishing, monitoring, and reviewing certified service-disabled veteran-owned business enterprise programmatic goals.

e. By submitting a bid or proposal, a bidder agrees to demonstrate its good faith efforts to achieve the applicable SDVOB participation goals by submitting evidence thereof in a format prescribed by the Fund.

f. Additionally, a bidder will be required to submit the following information as evidence of compliance with the foregoing:

i. An SDVOB Utilization Plan in accordance with paragraph (2) of the above Section 8 Submission of Post Bid Information. Any modifications or changes to an accepted SDVOB Utilization Plan after the Contract award and during the term of the Contract must be submitted via the online Utilization Plan application and submitted to the Fund for review and approval. Business Partners can modify their Utilization Plans by visiting the Fund's website and following the instructions for the online Utilization Plan application.

ii. The Fund will review the submitted SDVOB Utilization Plan and advise the bidder of the Fund's acceptance or issue a notice of deficiency within 20 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 its 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, such a failure to remedy the deficiency may be grounds for disqualification of the bid or proposal for non-responsiveness or the Fund may notify the bidder and request the bidder submit a waiver form within five (5) business days.

g. The Fund may disqualify a bidder as being non-responsive under the following circumstances:

i. If a bidder fails to submit an acceptable SDVOB Utilization Plan;
ii. If a bidder fails to submit a timely written remedy to a notice of deficiency;
iii. If the Fund determines the bidder's written remedy to a notice of deficiency is inadequate;
iv. If a bidder fails to file a waiver form in a timely manner;

h. A bidder is further subject to disqualification if:

a. The bidder fails to cooperate with the Fund; or
b. If the Fund determines that the bidder has failed to document its good faith efforts.

i. The successful bidder will be required to attempt to utilize, in good faith, any SDVOB identified within its SDVOB 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.

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

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.

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 plan holders 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. If the walk-through in Section 00 25 13 Pre-Bid Meetings is mandatory, the Fund expressly reserves the right to reject any Proposal as not responsive if the bidder failed to attend the mandatory walk-through.

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 Offeror/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. Bidder affirms that all costs and time associated with compliance of these health and safety requirements, including Emergency Regulations, are included in its bid. The current NYS Emergency Regulations and Guidance are available at the following website:

https://regs.health.ny.gov/regulations/emergency

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. Bidder shall comply with Section 2.03 of the Contract regarding any claims or disputes stemming from such health and safety requirements.

*****

SUNY State University Construction Fund

MWBE/SDVOB
UTILIZATION PLAN INSTRUCTIONS

MWBE and SDVOB Utilization Plans are required to be submitted electronically via the Fund's online Utilization Plan Application, by the three low bidders **within seven (7) calendar days** after the bid opening. Submission of a Utilization Plan which fails to at least meet each goal must be accompanied by documentation of specific efforts undertaken both pre and post bid. The Contractor is required to provide sufficient documentation of the efforts made in the development of their MWBE and SDVOB Plans. The documentation should be responsive to the "Good Faith Efforts" guidelines and demonstrate the contractor's commitment to providing opportunities for MWBE and SDVOB firms in the development of each respective Utilization Plan.

The Fund will review the MWBE and SDVOB Utilization Plans and notify the contractor of any deficiencies and determine necessary actions to bring the Plan into compliance. The firms listed on the Utilization Plan will be contacted for verification of participation. A copy of the approved Plan is 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 Utilization Plan, and the Construction Contract may be withheld.**

ONLINE UTILIZATION PLAN If you are one of the lowest three bidders and have not received an email within 24 hours, please contact SUCF.ConstructionBids@suny.edu	Following the project bid opening, the Fund will forward the three lowest bidders an email containing instructions for submitting their MWBE and SDVOB Utilization Plan. The email will provide each firm with a link to complete their Plans electronically via the Fund's online Utilization Plan application. Utilization Plans are accepted in the ONLINE FORMAT ONLY; any other form submittal will be rejected.
CONTRACT INFORMATION	▪ The contract information will appear at the top of the application screen. (Project Number, Contract Number, Bid Date, Contract Award Value, MWBE/SDVOB Contract Goals)
BUSINESS PARTNER INFORMATION **MWBE/SDVOB CONTACT**	▪ Verify the accuracy of your Company Name, Company Address and FEIN populated by the application. ▪ Enter the Contact Name, Contact Title, Phone, Fax, Email Address of the person responsible for MWBE/SDVOB participation with your organization.
SUBCONTRACTOR/SUPPLIER INFORMATION **BE ADVISED: Only firms holding "current" New York State certification status are acceptable for participation credit.**	▪ Enter a valid Federal Identification number for each MBE, WBE, and SDVOB subcontractor and supplier. ▪ The NYS certified MBE/WBE/SDVOB firm matching the Federal ID number provided will autofill in the application. ▪ Verify the subcontractor/supplier information for accuracy. **MWBE firms must be certified by the New York State Department of Economic Development Corporation** as a Minority or Women-Owned Business to comply with the program requirements. It is the responsibility of the contractor to ensure firms proposed for utilization have an active certification with NYS and are included in the directory at the time of submission. The NYS directory of certified MWBE firms is available on the Internet at https://ny.newnycontracts.com/ NOTE: Dual certified firms may be used as either, but not both, within their certification product code. **SDVOB firms must be certified by the Office of General Services, Division of Service-Disabled Veterans' Business Development** as a Service-Disabled Veteran-owned Business to comply with the program requirements. It is the responsibility of the contractor to ensure firms proposed for utilization have an active certification with NYS and are included in the directory at the time of submission. The NYS directory of certified Service-Disabled Veteran-Owned Businesses is available on the Internet at https://sdves.ogs.ny.gov/

SUNY State University Construction Fund

MWBE/SDVOB
UTILIZATION PLAN INSTRUCTIONS

SUBCONTRACTOR/SUPPLIER INFORMATION	▪ If the participation is not direct from the Prime/General Contractor, Enter the 1st or 2nd tier subcontractor's name and email address. **The prime contractor is responsible for ensuring participation included in the Plan by subcontractors/suppliers is executed.**
DESCRIPTION OF WORK **The services MWBE and SDVOB firms provide must be among those explicitly identified in the firm's profile (codes) as listed in the NYS MWBE and SDVOB Directory.** **Firms who participate in the project outside of these conditions will not be credited toward the MWBE and/or SDVOB Utilization Plan and goals for the contract.**	▪ Provide a specific but brief description of work to be performed or supplies to be purchased from the MBE, WBE, SDVOB subcontractor or supplier. ▪ Select the firm designation: Subcontractor, Supplier, or Broker The following credit will be applied for MWBE subcontractors/suppliers. ▪ Construction Subcontractor – 100% ▪ Construction Supplier (MWBE) – 60% Firms that sell goods out of their revolving inventory. **Enter the full contract value. The system will calculate 60% credit.** ▪ Construction Supplier (SDVOB) – 100% ▪ Brokers/Construction Manufacturers' Representatives – Firms serving as a third-party intermediary between consumers of items and manufacturers, suppliers, or other entities, may only receive credit for the commission they receive or their markup percentage for brokering. ▪ MWBE Manufacturers: NYS-certified MWBEs that serve and are coded as a manufacturer may receive 100% credit for their MWBE utilization.
SUBCONTRACTOR/SUPPLIER SCHEDULE	▪ Enter the anticipated start and completion dates for each MBE, WBE, and SDVOB subcontractor and/or supplier. ▪ **Enter the dates in accordance with the scope and project scheduling.**
ATTACHMENTS	▪ Upload supporting documentation i.e., letter of explanation, good faith efforts documentation. ▪ Upload signed MWBE and SDVOB Utilization Plans (original signature) ▪ After attaching documents return to the submit tab to finalize.
FINAL REVIEW	▪ Review all information prior to submitting. ▪ Select SAVE if you wish to continue working on the Plan prior to submission. ▪ To modify the Initial Plan prior to final submission, select the link provided in the original email from the Fund and choose "re-submit" for the option to edit the initial Utilization Plan.
SIGNATURE/SUBMIT ***An original signature is required on the Utilization Plan.**	▪ Provide the Name, Title, Email address and Signature of a Company Officer. ▪ Choose "Create Utilization PDF" ▪ Print and Sign MWBE and SDVOB Utilization Plans ▪ Upload the Plans into the "Attachments" section of the application. ▪ Select SUBMIT to forward for approval.
UTILIZATION PLAN MODIFICATION **Prior approval must be obtained from the Fund for decrease in participation or deletion of a firm. A letter of explanation and supporting documentation of efforts is required to be submitted to the Fund. Upload supporting documentation via the attachments tab.**	▪ To modify the Initial Plan prior to final submittal, select the link provided in the original email from the FUND and choose "re-submit" for the option to edit the Utilization Plan. ▪ To modify an existing Plan, return to the Business Partner Application ➢ **ADD** – choose "add subcontractor" on the bottom of the subcontractor/supplier tab for firms that you are adding to the plan. Click the disc icon to save. ➢ **DELETE** – To remove firms from the approved Plan, locate the name of the firm, Click the icon to save, **an explanation is required.** ➢ **PLAN VALUE UPDATE-** Click the icon next to the appropriate subcontractor and/or supplier and enter the dollar amount of the increase/decrease of the award value. Click the icon to save, **an explanation is required.** ➢ **SCHEDULE UPDATE** – Click the icon next to the appropriate subcontractor and/or supplier to change the anticipated start and completion dates for each firm. Click the disc icon to save.

For questions and/or assistance contact the Opportunities Program office. Phone: 518-320-1650 | Email: sucf.opportunityadmin@suny.edu

Section 00 25 13 Pre-Bid Meetings

A pre-bid conference and project walk-through will be held on **August 3, 2026** with all Bidders

assembled at **10:00 AM at the LI-1 entrance, located on the north side of Bartle Library.** No individual or additional walk-throughs may be performed during the bid preparation 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 (Hold questions on scope until item 5 below):

1. Confirm that bidders have a full bid package including any addenda issued to date.
2. Review 00 21 13 20 Information for Bidders in its entirety.
3. 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:
    - Ten (10) percent for MBE participation
    - Ten (10) percent for WBE participation
4. See Section 12 of the Information for Bidders for participation by Service-Disabled Veteran-Owned Businesses. The SDVOB goal for this project is Three (3)%
5. Utilization Plans shall be accepted in the ONLINE FORMAT ONLY using the Fund's web-based application; any other form of submittal will be rejected. Low bidders will receive an email with access instructions after receipt of bids. Questions must be sent to SUCF.OpportunityAdmin@suny.edu
6. Review the timetable for submitting questions and issuing addenda.
7. Confirm the bid date and time.

    To provide for an efficient bid opening, do not submit additional documents other than two Proposals and two bid bonds in your bid envelope.
8. Advise bidders that no changes to the Contract Documents are binding unless included in an addendum. Verbal comments are not binding.
9. 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.

b. Remind bidders and potential subs that each must have experience performing scope similar to this project scope. Review the specific Qualifications for Bidders and the nominated subcontractors as written in the Information for Bidders with the attendees.

10. 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.

11. Other items:

a. Refer the bidders to the 00 21 13 15 Contractors Bid and Post Bid Checklist.

b. Note that for projects advertised for bids after July 1, 2023, insurance requirements have changed. Key points for bidders are:

- All required insurance shall be written by companies that are licensed or authorized by the New York State Department of Financial Services to issue insurance in the State of New York and that have an A.M. Best Company rating of "A-," Class "VII" or better;
- Insurances from authorized (excess line) carriers may be acceptable. Bidders must review the project specific insurance listed in Section 5.06, **Section 5.07** and Schedule A of the Construction Agreement with their agent/broker; and
- Owner's Protective Liability Insurance is no longer required from contractors.

For projects with bid openings on or after July 14, 2024, **Builder's Risk Insurance will <u>no longer</u> be provided by the Fund under a master builders risk program and shall be at the cost of the Contractor.**

Bidders and Asbestos subs must consult their insurance company/agent prior to bidding.

c. 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.

d. Note the dollar threshold for named subcontractors back is $20,000 except for asbestos subs of any value, who must be named.

e. Starting December 30, 2024 all contractors and subcontractors submitting bids or performing construction work on public work projects or private projects covered

under Article 8 of the Labor Law are required to register with the New York State Department of Labor (NYSDOL) under Labor law Section 220-i.

For more information or to register, please visit:

https://dol.ny.gov/contractor-and-subcontractor-landing

12. Have a question-and-answer session.

13. Tour the site and existing conditions.

_____
NAME OF BIDDER

_____
ADDRESS OF BIDDER

00 42 13 **PROPOSAL FOR SUCF PROJECT NO. 071099-00**

Replace Storefront and Exterior Doors – Bartle Library, University Union, and Couper Administration Building

SUNY at Binghamton

TO THE STATE UNIVERSITY CONSTRUCTION FUND:

1. The Bidder agrees that it shall complete all work necessary within 900 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 $1,300.00 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

   Three Hundred eighty-three thousand seven hundred $ 383,700.000
   (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:

Alternate Number	Add/ Deduct	Amount In Words	Amount In Figures
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.

Work or Materials Description	Amount in Words	Amount in Figures
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:

Work or Materials Description	Amount in Words	Amount in Figures
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.

Addendum Number	Date	Addendum Number	Date
_____	____/____/____	_____	____/____/____
_____	____/____/____	_____	____/____/____
_____	____/____/____	_____	____/____/____

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-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 Section139-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

STATE UNIVERSITY CONSTRUCTION FUND
H. Carl McCall SUNY Building 353 Broadway ● Albany, New York 12246

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

By submission of this proposal, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint proposal each party thereto certifies as to its own organization, under penalty of perjury, that the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of section two hundred one-g of the labor law.

I, _____, hereby affirm, under penalty of perjury, that
Printed Name of Person Executing Certification

I am _____ of the above-named bidder, that I am
Printed Title of Person Executing Certification

authorized to make this certification on behalf of such bidder, and I further certify that this certification is true, accurate and complete to the best of my knowledge and belief.

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

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/she executed the same.

_____
Notary Public

Submit form with original signatures

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: **071099-00**

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: _____

STATE UNIVERSITY CONSTRUCTION FUND
H. Carl McCall SUNY Building 353 Broadway ● Albany, New York 12246

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: _____

Attachment A – List of Completed Similar Construction Projects

SUCF PROJECT # **BIDDER**

Project #1 Title	Award Date	Contract Amount	Date Completed
Project Description Related to IFB Requirements			
Agency/Owner & Contact Person	Contact Information - Telephone No. & Email Address		
Were you the prime contractor on this project	Was the contract single bid		
Project #2 Title	Award Date	Contract Amount	Date Completed
Project Description Related to IFB Requirements			
Agency/Owner & Contact Person	Contact Information - Telephone No. & Email Address		
Were you the prime contractor on this project	Was the contract single bid		
Project #3 Title	Award Date	Contract Amount	Date Completed
Project Description Related to IFB Requirements			
Agency/Owner & Contact Person	Contact Information - Telephone No. & Email Address		
Were you the prime contractor on this project	Was the contract single bid		
Form Completed by: Phone Number: Email: Date:			

APPENDIX A

For SUCF Project No. 071099-00

BID BREAKDOWN

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

	DIVISION OR SECTION	**AMOUNT**
1.	Division 1 - General Requirements	$ _____
2.	Division 2 - Asbestos Abatement	$ _____
3.	Division 2 – Building Demolition	$ _____
4	Division 3 – Concrete	$ _____
5.	Division 4 – Masonry	$ _____
6.	Division 5 – Metals	$ _____
7.	Division 6 – Wood, Plastics, and Composites	$ _____
8.	Division 7 – Thermal and Moisture Protection	$ _____
9.	Section 08 11 13 – Hollow Metal Doors and Frames	$ _____
10.	Section 08 41 13 – Alum.-Framed Entrances and Storefronts	$ _____
11.	Section 08 43 13 – Glazed Alum. Curtain Walls	$ _____
12.	Section 08 80 00 – Glazing	$ _____
13.	Division 8 – Openings (other)	$ _____
14.	Division 9 - Finishes	$ _____
15.	Division 12 – Furnishings	$ _____
16.	Division 21 – Fire Suppression	$ _____
17.	Division 22 - Plumbing	$ _____
18.	Division 23 – Heating Ventilating and Air Conditioning	$ _____
19.	Division 26 - Electrical	$ _____
20.	Division 27 – Communications	$ _____
21.	Division 28 – Electronic Safety and Security	$ _____
22.	Division 31 - Earthwork	$ _____
23.	Division 32 – Exterior Improvements	$ _____
24.	Division 33 – Utilities	$ _____
25.	Sum of all lines above (**Base Bid)**	$ _____
26.	Field Order Allowance	$ 383,700.00
	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 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

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 <u>not</u> 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 <u>joint venture</u>, 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

SUCF Project:

at the

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

dollars

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 Contractors 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.

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 cancel-lation 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 uncontemplated 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 ( ) dollars ($) 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 Insurance Requirements

(1) General Provisions

a. Prior to the execution of the Agreement, the Contractor shall at its sole cost and expense, procure and furnish to the Fund a Certificate of Insurance and required endorsements in a form satisfactory to the Fund demonstrating that the Contractor has complied with the specific provisions of this Article and the Agreement, The Contractor shall maintain in force and effect at all times during the Agreement from Notice to Proceed until Final Acceptance, or as may otherwise be required by this Article and the Agreement, policies of insurance covering all operations under the Agreement whether performed by the Contractor or its subcontractors as herein set forth.

b. All insurance required by the Agreement shall be written by companies that have an A.M. Best Company rating of “A-,” Class “VII” or better. In addition, companies writing insurance intended to comply with the requirements of the Agreement shall be licensed or authorized by the New York State Department of Financial Services to issue insurance in the State of New York or meet such other requirements as may be acceptable to the Fund in its sole and exclusive discretion. If during the duration of coverage on the Agreement, the carrier’s A.M. Best rating falls below “A-,” Class “VII,” the insurance must be replaced, on or before the renewal date of the policy with insurance that meets the requirements set forth herein.

(2) Submission of Insurance

a. **Coverage Types**. The types of insurance coverage and policy limits required from the Contractor pursuant to the Agreement are specified in Paragraph (3) Specific Coverage below and limits outlined in Schedule A attached hereto (“Schedule A”).

b. **Policy.** Except as may be otherwise specifically provided herein or agreed to in writing by the Fund, policies of insurance must be maintained on an occurrence basis at all times during the Agreement from Notice to Proceed until Final Acceptance, or as may be otherwise required by this Article and the Agreement, with limits not less than those set forth in Schedule A and as required by the terms of the Agreement, or as required by law, whichever is greater. If such insurance contains an aggregate limit, it shall apply separately on a per project basis.

c. **Certificates of Insurance.** The Contractor shall provide the Fund a Certificate or Certificates of Insurance, on the appropriate Certificate of Liability Insurance ACORD form, as well as the ACORD 855 NY form for liability insurance including required policy endorsements, in accordance with New York Insurance Law and submitted directly by the insurance broker or agent to the Fund, before commencing any work under the Agreement. The certificate C105.2 or the U26.3 (State Insurance Fund) are the only acceptable proof of coverage for Worker’s Compensation. The DB120.1 is the only acceptable proof of coverage for Disability Benefits. Certificates must reference the NAIC number of the issuing company, policy number, effective dates of coverage, policy limits consistent with Schedule A and the Agreement requirements, name the Additional Insureds, and shall name the Fund as the Certificate Holder.

d. **Primary Coverage.** The liability and protective policies of insurance shall provide primary and non-contributory coverage to the Additional Insureds required in Section 5.06(2)(h) below for any claim arising from the Contractor’s work under the Agreement, or because of the Contractor’s activities. Any other insurance maintained by the Fund or Additional Insureds shall be in excess of and shall not contribute to the Contractor’s insurance or subcontractor’s insurance, regardless of the “other insurance” clause contained in the Fund’s or Additional Insured’s policy of insurance, if any. A copy of the

endorsement reflecting this requirement may be requested by the Fund.

e. **Policy Renewal/Expiration.** Unless otherwise agreed to in writing by the Fund, all insurance policies must have a policy period of at least one year. Not less than five (5) days prior to the expiration date or renewal date of the policy for insurance, the Contractor shall supply the Fund with updated replacement certificates of insurance and required endorsements. The Contractor shall give written notice to the Fund of any letter or notification that cancels, materially changes, or non- renews the policy and the 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.

   Unless otherwise agreed to in writing by the Fund, policies shall be written to include a provision that the policy will not be canceled, materially changed, or not renewed without at least thirty (30) days' prior, written notice except for non-payment, in which case notice shall be provided as required by law from the insurance carrier to the Fund. In addition, if required by the Fund, the Contractor shall deliver to the Fund within three (3) business days of such request a copy of any or all certificates of insurance and required endorsements not previously provided.

   If, at any time during the Agreement, the Fund determines that the insurance as required is not in effect as per the terms of the Agreement, or proof thereof is not provided to the Fund, or the Contractor has otherwise failed to strictly adhere to the provisions of this Article, the Fund may withhold further Agreement payments and shall have the option 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..

   With exception of the A.M. Best rating requirements, if at any time the coverage provisions and limits of the policies of insurance required herein do not meet the provisions and limits set forth in Schedule A and the Agreement, the Contractor shall immediately cease work on the project site. Further, the Contractor will not be allowed access to the project site without providing proof of proper insurance. The Contractor shall not resume work on the project until permitted to do so by the Fund. Any delay or time lost as a result of the Contractor not having insurance or providing proof thereof as required by this Article and the Agreement shall not give rise to a delay claim or any other claim by the Contractor against the Fund. If required by the Fund, the Contractor shall deliver to the Fund within fifteen (15) business days of such request, full and complete copies of any or all policies of insurance and endorsements relating to the project that were not previously provided, certified by the insurance carrier as true and complete.

f. **Self-Insured Retention / Deductibles.** Certificates must disclose any Deductible, Self-Insured Retention, Aggregate Limit or any exclusion to the policy that materially changes the coverage required by the Agreement, and Deductibles or Self-Insured Retentions above $25,000 shall be subject to approval from the Fund. The Contractor shall be solely responsible for all claim expenses and loss payments within the Deductible or Self-Insured Retention.

g. **Subcontractors.** Should the Contractor engage subcontractors, the Contractor shall impose on those entities the general insurance requirements of this Article and the Agreement. Required insurance limits shall be determined commensurate with the work of the subcontractor. The Contractor shall maintain the subcontractor certificates of insurance and required endorsements on file which shall be delivered to the Fund within three (3) business days of such request. If required by the Fund, the Contractor shall deliver to the Fund within fifteen (15) business days of such request, full and complete copies of any or all subcontractor policies of insurance and endorsements relating to the project that were not previously provided, certified by the insurance carrier as true and complete.

h. **Additional Insureds**. The Contractor shall cause to be included in each of the liability insurance policies coverage for on-going and completed operations naming as Additional Insureds, The People of the State of New York, the State University of New York, the Dormitory Authority of the State of New York, the Fund, other such entities as named in Schedule A, and their officers, agents, and employees ("Additional Insureds"). An Additional Insured Endorsement evidencing such coverage shall be provided to the Fund prior to the commencement of the Agreement. Additional Insured protection afforded must contemplate on-going and completed operations, and the additional insured protection for products/completed operations must remain in

place for three years after Final Acceptance. For Contractors who have Self-Insured Retention, the Contractor shall be obligated to defend and indemnify the above-named Additional Insureds with respect to Commercial General Liability insurance and Business Automobile Liability insurance, in the same manner that the Contractor would have been required to pursuant to this Article had the Contractor obtained such insurance policies.

i. **Waiver of Subrogation.** Unless otherwise agreed to in writing by the Fund, with the exception of Disability policies, all policies of insurance must be endorsed to provide that there shall be no right of subrogation against the State of New York, the State University of New York, the Dormitory Authority of the State of New York, the Fund, the Additional Insureds, and their officers, agents and employees. To the extent that any of the policies of insurance prohibit such a waiver of subrogation, the Contractor shall secure the necessary permission to make this waiver.

(3) Specific Coverage

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

a. **Commercial General Liability Insurance.** A Commercial General Liability ("CGL") 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/ subcontractors, blanket contractual liability including tort liability of another assumed in contract, liability arising from all work and operations under the Agreement, defense and indemnification obligations, including those assumed under the Agreement, cross liability coverage for Additional Insureds, products/completed operations for a term no less than three years commencing upon Final Acceptance, explosion, collapse, and underground hazards, contractor means and methods, and liability resulting from Section 240 or Section 241 of the NYS Labor Law. Such policy shall be written on ISO Occurrence form CG 00 01 or a substitute form that is acceptable to the Fund, providing equivalent coverage.

The General Aggregate limit included in the CGL insurance shall apply separately on a per project basis at the limits set forth herein in Schedule A.

Insurance policies that remove or restrict blanket contractual liability located in the "insured contract" definition (as stated in Section V, Number 9, Item f in the ISO CGL policy) so as to limit coverage against claims that arise out of the work under the Agreement, or that remove or modify the "insured contract" exception to the employers liability exclusion, or that do not cover the Additional Insureds for claims involving injury to employees of the Named Insured or subcontractors, are not acceptable.

In the event any work under the Agreement involves activity on or within 50 ft. of railroad property or a railroad right-of-way or requires entrance upon a railroad property or railroad right-of-way, or requires an assignment of a Railroad employee, any exclusion for such work must be deleted. In addition, the Contractor shall otherwise fully comply with Section 5.06 (3)h below. For purposes of this paragraph, a subway is also a railroad.

b. **Comprehensive Business Automobile Liability Insurance.** A Commercial Automobile Liability insurance policy at the limits set forth herein in Schedule A covering liability arising out of the use of any motor vehicle in connection with the Agreement, 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 Agreement involves the removal of hazardous waste from the project site or otherwise transporting Hazardous Materials, pollution liability coverage for covered autos shall be provided.

c. **Workers' Compensation.** New York State Workers' Compensation (including occupational disease) and Employer's Liability insurance coverage during the life of the Agreement for the benefit of the Contractor's and its subcontractors' employees as are required to be covered by the New York State Workers' Compensation Law.

In the event any of the work under the Agreement involves activity on or near a shoreline or on or near navigable waterways or when any part of the work under the Agreement is connected to water related activities, an endorsement to the Workers' Compensation policy or the Protection &

Indemnity policy providing coverage for all of the Contractor's and its subcontractors' employees under the Jones Act and the US Longshore and Harbor Workers' Compensation Act will be required and shall be delivered to the Fund within three (3) business days of such request. A waiver of subrogation in favor of the Additional Insureds must be included on the policy. In addition, the Contractor shall otherwise fully comply with Section 5.06(3)g below.

Evidence of Workers' Compensation and Employer's Liability coverage must be provided to the Fund on forms specified by the Chairman of the New York State Workers' Compensation Board.

d. **Disability Benefits.** Disability coverage during the life of the Agreement for the benefit of the Contractor's and its subcontractors' employees as are required to be covered by the New York State Disability Benefits Law.

Evidence of New York State Disability Benefits coverage must be provided to the Fund on forms specified by the Chairman of the New York State Workers' Compensation Board.

e. **Umbrella and Excess Liability.** When the limits of the CGL, Auto, and/or Employers Liability policies procured are insufficient to meet the limits specified in Schedule A, 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 Insureds shall be considered in 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.

f. **Contractor's Pollution Liability.** If the Agreement involves abatement, handling, removal, repair, replacement, enclosure, encapsulation and/or disposal of any pollutants, which includes but is not limited to, petroleum, petroleum products, Hazardous Materials or substances including asbestos, lead, mercury, PCBs, fungus and those as defined by applicable State and federal laws and regulations (collectively referred to as "Hazardous Activities"), the Contractor shall procure, or otherwise obtain through an approved subcontractor, and maintain in full force and effect throughout the term of the Agreement, from Notice to Proceed and for three years after Final Acceptance, Contractor's Pollution Liability with limits as set forth in Schedule A, providing coverage for bodily injury and property damage, including loss of use of damaged property or of property that has not been physically injured. Such policy shall provide coverage for actual, alleged or threatened emission, discharge, dispersal, seepage, release or escape of pollutants, including any loss, cost or expense incurred as a result of any cleanup of pollutants or in the investigation, settlement or defense of any claim, suit, or proceedings against the Fund or Additional Insureds arising from the Contractor's or its subcontractors' work under the Agreement.

In addition, in the event the Contractor or any subcontractor is engaged in Hazardous Activities related to the Agreement, the Contractor or subcontractor shall, to the fullest extent permitted by law, hold harmless and indemnify the Additional Insureds and 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.

g. **Marine General Liability, Protection & Indemnity, Hull & Machinery, Jones Act and United States Longshore and Harbor Workers' Act Coverage.** In the event any of the work under the Agreement involves activity on or near a shoreline or on or near navigable waterways or when any part of the work under the Agreement is connected to water related activities (collectively referred to as "Marine Operations"), Marine General Liability, Protection & Indemnity and Hull and Machinery coverage is required. Hull and Machinery coverage shall be provided for the total value of the watercraft and equipment used. The Contractor shall obtain Marine General Liability and Protective and Indemnity Liability Insurance for all Marine Operations relating to the Agreement at the limits set forth herein in Schedule A. Any endorsements that eliminate or minimize coverage for claims related to the imposition of New York Labor Law are prohibited. Certificate of Liability Insurance must be provided that certifies the required coverage is in place and

must be accompanied by an ACORD 855 form or its equivalent.

h. **Railroad Protective Liability**. In the event any work under the Agreement involves activity on or within 50 ft. of railroad property or a railroad right-of-way, or requires entrance upon a railroad property or railroad right-of-way, or requires an assignment of a Railroad employee, the Contractor shall provide and maintain a Railroad Protective Liability ("RPL") Insurance Policy in the amount required by the respective railroad as set forth herein in Schedule A. For purposes of this paragraph, a subway is also a railroad.

The RPL policy must name the Railroad as the Named Insured. No Additional Insureds may be listed on the RPL policy and the definition of "physical damage to property" must be amended to mean direct and accidental loss of or damage to "all property of any Named Insured and all property in any Named Insured's care, custody or control."

Evidence of RPL must be provided to the Fund on a Certificate of Insurance, and a detailed Binder pending issuance of the policy, or on an ISO-RIMA or equivalent form approved by the Railroad and meet any other requirements as specified by the Railroad and/or the Fund."

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: Harry McLellan, 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 Contractor. 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.

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

STATE UNIVERSITY CONSTRUCTION FUND

By _____

Title _____

Name _____

(COMPANY NAME)

By _____

Date: _____

SUCF Project No. ( )

If Corporation, affix Corporate Seal

Contract No. DXXXXXX

ACKNOWLEDGMENTS

(ACKNOWLEDGMENT BY INDIVIDUAL)

STATE OF)
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)
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 h self depose and say that he is a

member of the firm of _____ consisting of h self 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)
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

State University Construction Fund 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 or the State University Construction Fund, whether a contractor, licensor, licensee, lessor, lessee or any other party; the State University Construction Fund shall hereinafter be referred to as the "Fund"):

1. EXECUTORY CLAUSE. In accordance with Section 41 of the State Finance Law, the State and the Fund 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 or the Fund'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 Fund retains its right to approve an assignment and to require that any Contractor demonstrate its responsibility to do business with the Fund. The Contractor may, however, assign its right to receive payments without the Fund'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. (a) In accordance with Section 112 of the State Finance Law and Section 373 of the Education Law, the State Comptroller's approval is required for the following contracts: (i) goods, services, construction and construction-related services which exceed $75,000 and (ii) purchases utilizing an Office of General Services centralized contract which exceed $200,000;

(b) If this contract exceeds the threshold amounts listed above in Paragraph 3(a), or, if this is an amendment for any amount to a contract which, as so amended, exceeds said threshold amounts, or if, by this contract, the State or the Fund agrees to give something other than money when the value or reasonably estimated value of such consideration exceeds $25,000, it shall not be valid, effective or binding upon the Fund or the State and the Fund and the State shall bear no liability, until it has been approved by the State Comptroller or the pertinent pre-audit reviw period has elapsed 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, citizenship or immigration status, 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 Fund of any Fund 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 Fund 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 all common law, equitable and statutory rights of set-off. These rights shall include, but not be limited to, the State's and the Fund's 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 relative thereto. The State and the Fund shall exercise their 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 and any other agencies involved in this contract, 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 Fund 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 Fund 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 Fund or 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 purchasing unit of the Fund contracting 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 Fund's request, 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 and the Fund 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 Section 165 of the State Finance Law. Any such use must meet with the approval of the State and the Fund; 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 and Technology Development
625 Broadway
Albany, New York 12245
Telephone: 518-292-5100

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, 33rd Floor
New York, NY 10017
646-846-7364
email: mwbebusinessdev@esd.ny.gov
https://ny.newnycontracts.com/FrontEnd/searchcertifieddirectory.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 Employment 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 Fund 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 of 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 May 2023, 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 899-bb and State Technology Law § 208.

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 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 Fund 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 contract, if the Fund determines that such action is in the best interests 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/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 Fund.

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.
The Fund reserves the right to reject any bid, request for assignment, renewal or extension for an entity that appears on the Prohibited Entities List prior to the award, assignment, renewal or extension of a contract, and to pursue a responsibility review with respect to any entity that is awarded a contract and appears on the Prohibited Entities list after contract award.

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.

Work or Material Description	Amount in Words	Amount in Figures

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.

Work or Material Description	Amount in Words	Amount in Figures

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)

State University Construction Fund

Insurance Requirements
Schedule A

Project: 071099 - 00- Renovate Exterior Storefronts at Library University Union and Administration
Contract Type: Construction - Full Service

All certificate(s) of Insurance/Acord Form must be submitted pursuant to Contract Article 5.06 and include the following information:

- For each insurance certificate, the name and NAIC number of issuing company, number of policy, with effective dates and deductibles, if applicable
- Policy limits consistent with the requirements listed below
- Certificate must disclose the policies are on a primary and non-contributory basis
- The contract/project number assigned by the Fund
- Carriers must meet the following criteria:(1) AM Best Company rating of A- or greater, (2) financial score of VII or greater

	Policy Limits				
Insurance Type	**Per Occurrence**	**Per Aggregate**	**Products & CO**	**Minimum Limits and Special Conditions**	**Forms**
Worker's Compensation	As required by NYS			Statutory per New York State laws without regard to jurisdiction. Waiver of Subrogation is required.	Form C105.2 (Certificate of NYS Workers' Compensation Coverage) or the U-26.3 (State Insurance Fund Certificate)
Disability	As required by NYS			Statutory per New York State laws without regard to jurisdiction.	Form DB120.1 (Certificate of Insurance Coverage under the NYS Disability Benefits Law).
General Liability	2,000,000	2,000,000	2,000,000	General Aggregate limit must apply per project.	Accord 25 and Certificate of Liability Addendum Acord 855
Automobile	1,000,000				
Builder's Risk	To Be Determined				State University Construction Fund, the contractor, and its subcontractors to be added a Named Insured.

	Contract Additional Insurance				
Insurance Type	**Per Occurrence**	**Per Aggregate**	**Products & CO**	**Minimum Limits and Special Conditions**	**Forms**
Pollution (Asbestos)	2,000,000	2,000,000			Accord 25 certificate and endorsements the endorsement may be replaced with the CG 20 38 or its equivalent.

State University Construction Fund

Insurance Requirements
Schedule A

Project: 071099 - 00- Renovate Exterior Storefronts at Library University Union and Administration
Contract Type: Construction - Full Service

Additional Insured for each liability insurance policy, including coverage for on-going and completed operations:

- The People of the State of New York
- The State University of New York
- The Dormitory Authority of the State of New York
- The State University Construction Fund
- The Campus
- If applicable, Construction Manager
- If applicable, Railroad
- The officers, agents, and employees of those listed above
- If applicable, non-state landowner impacted by this work

Guidance to Submit Insurance Certificates

- Certificates must be signed.
- Acord forms must be emailed directly by the agent or carrier.
- Email certificates and other insurance related correspondence to sucf.insurance@suny.edu.
- Include in the subject line the SUCF contract number or project number.
- Please do not mail additional copies to the Fund.

Report Notes:

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, convenants 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 convenants 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

00 73 43 Wage Rate Requirements

Wage Rates and Supplements

The following are the rates of wages and supplements determined by the Industrial Commissioner of the State of New York as prevailing in the locality of the site at which the work will be performed:

*Effective 7/1/01, NYSDOL stopped providing individually printed copies of the **updated** schedules on existing contracts. Updated schedules may be obtained on the NYSDOL website:*

An official website of New York State.
Here's how you know

Prevailing Wage

· Wage Schedule · Submit Notice Of Award · Submit Notice Of Project Completion

PRC#: 2026010937
Type of Contracting Agency: State University Construction Fund
Acceptance Status: Accepted Article 8

Contracting Agency

State University Construction
Donald Delude
Associate Project Coordinator
H. Carl McCall SUNY Building
353 Broadway
Albany NY 12246

(518) 320-3217
donald.delude@suny.edu

Send Reply To

Andrew Merriam
Architect
450 South Salina Street
Suite 500
Syracuse NY 13202

(315) 472 -7806
amerriam@qpkdesign.com

Project Information

Project Title	Replace Storefront at Binghamt
Description of Work	Replace Storefront and Exterior Doors- Bartle Library, University Union and Couper Administration Building
Contract Id No.	071099-00
Project Locations(s)	Binghamton University
Route No / Street Address	4400 Vestal Pkwy E
Village / City	Binghamton
Town	
State / Zip	NY 13902
Nature of Project	Other Reconstruction, Maintenance, Repair or Alteration
Approximate Bid Date/Service Date	07/18/2026
Checked Occupation(s)	Construction (Building, Heavy & Highway, Sewer, Water, Tunnel)

Applicable Counties

Broome

Kathy Hochul, Governor

Roberta Reardon, Commissioner

State University Construction

Andrew Merriam
450 South Salina Street
Suite 500
Syracuse NY 13202

Schedule Year	2025 through 2026
Date Requested	04/20/2026
PRC#	2026010937

Location	Binghamton University
Project ID#	071099-00
Project Type	Replace Storefront and Exterior Doors- Bartle Library, University Union and Couper Administration Building

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 Rate Case Number (PRC#) has been assigned to the schedule(s) for your project.

The schedule is effective from July 2025 through June 2026. 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.

Contractor Registry

Effective December 30, 2024 all contractors and subcontractors submitting bids or performing construction work on public work projects, or private projects covered by Article 8 of the Labor Law, are required to register with the New York State Department of Labor (NYSDOL) under Labor Law Section 220-i. To register, contractors and subcontractors must submit an application through NYSDOL's Contractor Registry portal which is available through the agency's Management System for Protecting Worker Rights (MPWR) https://mpwr-public.labor.ny.gov/en/login.

For additional information, please visit online.

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.

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 12226; 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, contemperaneous, 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 journeyworkers 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 journeyworker'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 12226 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

State University Construction

Andrew Merriam
450 South Salina Street
Suite 500
Syracuse NY 13202

Schedule Year 2025 through 2026
Date Requested 04/20/2026
PRC# 2026010937

Location Binghamton University
Project ID# 071099-00
Project Type Replace Storefront and Exterior Doors- Bartle Library, University Union and Couper Administration Building

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: $_____

Approximate Starting Date: ____/____/____

Approximate Completion Date: ____/____/____

Contract Type:
[ ] (01) General Construction
[ ] (02) Heating/Ventilation
[ ] (03) Electrical
[ ] (04) Plumbing
[ ] (05) Other : _____

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12226

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, https://dol.ny.gov/public-work-and-prevailing-wage
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

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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 12226

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.

NEW YORK STATE OF OPPORTUNITY. Department of Labor

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:

WE ARE YOUR DOL

NEW YORK STATE Department of Labor

New York State Department of Labor
Bureau of Public Work

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.

Your pay stub and wage notice received upon hire must clearly state your wage rate and supplement rate.

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: https://dol.ny.gov/bureau-public-work

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) 568-5287		

* 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 of 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 requirement s 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.

*Contractor Registry (LL 220-I): Effective December 30th, 2024
Labor Law Section 220-i(6) prohibits contractors from bidding on public work and prohibits both contractors and subcontractors from commencing work on private and public projects subject to prevailing wage requirements. This section requires contractors to submit their Certificate of Registration with their bid materials. Each Certificate of Registration will have a unique registration number. Failure to provide proof of registration, as required by Labor Law Section 220-i, as a minimum qualification will result in the bidder being deemed non-responsive. There is a public database of registered contractors and subcontractors available online at data.ny.gov to confirm registration validity. For additional information on how to register and the requirements, visit https://dol.ny.gov/public-work-contractor-and-subcontractor-registry-landing

*Electronic Certified Payroll (LL 220-J): Effective December 31st, 2025
Effective December 31, 2025, all contractors and subcontractors who perform public work, or covered private work subject to the prevailing wage, will be required to submit certified payrolls electronically to the Bureau of Public Work and Prevailing Wage Enforcement. Additional information about the electronic certified payroll submission system will be made available on the Department's Website at https://dol.ny.gov/Electronic-Payroll

Payrolls and Payroll Records

Every contractor and subcontractor MUST keep original payrolls or transcripts subscribed and affirmed as true under penalty of perjury. Payrolls must be maintained for at least three (3) years from the projects date of completion. Additionally, as per Article 6 of the Labor Law, contractors and subcontractors are required to establish, maintain, and preserve for not less that 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.

Payroll records and transcripts are required to be kept on site during all the time that work under that contract is being performed.

NOTE: *For more detailed information regarding Article 9 prevailing wage contracts, please refer to "General Provisions of Laws Covering Workers on Article 9 Public Work Building Service Contracts".*

If you have any questions concerning the attached schedule or would like additional information, please write to:

New York State Department of Labor
Bureau of Public Work
State Office Campus, Bldg. 12
Albany, NY 12240

OR

Contact the nearest BUREAU of PUBLIC WORK District Office

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

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.

Shift Work

If the timeline of the contract requires shift work be performed to meet deadlines, the BPWE will enforce the shift work rate as the required rate on the project whether or not shift work is specifically addressed in the contract.

Paid Prenatal Leave

Every employer shall be required to provide to its employees twenty hours of paid prenatal personal leave during any fifty-two week calendar period. Paid prenatal personal leave shall mean leave taken for the health care services received by an employee during their pregnancy or related to such pregnancy, including physical examinations, medical procedures, monitoring and testing, and discussions with a healthcare provider related to the pregnancy. Paid prenatal personal leave may be taken in hourly increments. Benefits for paid prenatal personal leave shall be paid in hourly installments. Employees shall receive compensation at the employee's regular rate of pay, or the applicable minimum wage established by the labor law, whichever is greater, for the use of Paid Prenatal leave.

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 12226

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

Broome County General Construction

Boilermaker — 04/01/2026

JOB DESCRIPTION Boilermaker **DISTRICT** 1

ENTIRE COUNTIES
Albany, Broome, Chenango, Columbia, Delaware, Essex, Fulton, Greene, Hamilton, Herkimer, Montgomery, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Tioga, Warren, Washington

WAGES
Per hour

	07/01/2025	01/01/2026
		+ $2.50
Boilermaker	$ 43.34	

SUPPLEMENTAL BENEFITS
Per hour

Journeyworker	$26.51
	+ $1.49*

(*) This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

OVERTIME PAY
See (B, E, Q, V) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 15, 25) on HOLIDAY PAGE
Note: When a holiday falls on Sunday, the day observed by the State or Nation shall be observed, and when Christmas Day and New Year's fall on Saturday, Friday will be observed as the holiday.

REGISTERED APPRENTICES
Wages per hour
(1/2) year terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th
65%	65%	70%	75%	80%	85%	90%	95%

Supplemental Benefits per hour

1st	2nd	3rd	4th	5th	6th	7th	8th
$19.71	$19.71	$20.69	$21.64	$22.62	$23.60	$24.57	$25.53
+1.49**	+1.49**	+1.49**	+1.49**	+1.49**	+1.49**	+1.49**	+1.49**

(**) This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

1-197

Broadband — 04/01/2026

JOB DESCRIPTION Broadband **DISTRICT** 4

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, Orleans, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

PARTIAL COUNTIES
Orange: Only in the Village of Greenwood Lake, Village of Highland Falls, Town of Tuxedo, and Town of Patterson

WAGES
NOTE: Applies to all public work and covered private projects, including those receiving ConnectAll funding subject to New York State Labor Law §224-E, solicited on or after July 1,2025. For all other projects solicited prior to July 1,2025 please see LINEMAN ELECTRICIAN-TELEDATA

Per Hour:	07/01/2025	08/04/2025
Field Tech Install/Repair	$ 51.31	$ 52.85

For outside work (excluding installation on building construction/alteration/renovation projects), stopping at first point of attachment (demarcation), installing/maintaining/repairing broadband internet service.

"Broadband", "Broadband Service", or "Broadband Internet" means mass-market retail service by wire or radio that provides the capability to transmit data to and receive data from all or substantially all internet endpoints, including any capabilities that are incidental to and enable the operation of the communications service, but excluding dial-up internet access service.

Note: EXLCUDES work within ten (10) feet of High Voltage (600 Volts and over) transmission lines for this work, please see LINEMAN

SUPPLEMENTAL BENEFITS
Per Hour:
$ 23.24

OVERTIME PAY
See (B, K, *R) on OVERTIME PAGE
* Two and one half times the hourly rate after the 8th hour

HOLIDAY
Paid: See (5, 6, 7, 11, 12) on HOLIDAY PAGE
Overtime: See (5, 6, 7, 11, 12) on HOLIDAY PAGE

4-CWA-Dist2

Carpenter - Building 04/01/2026

JOB DESCRIPTION Carpenter - Building **DISTRICT** 2

ENTIRE COUNTIES
Broome, Tioga

WAGES

Per hour:	07/01/2025	01/01/2026	07/01/2026 Additional	07/01/2027 Additional
Carpenter	$ 31.69	$ 32.19	$ 3.50*	$ 4.00*
Floor Coverer	31.69	32.19	3.50*	4.00*
Carpet Layer	31.69	32.19	3.50*	4.00*
Dry-Wall	31.69	32.19	3.50*	4.00*
Diver-Wet Day	36.25	36.25	24.44*	4.00*
Diver -Dry Day	32.69	33.19	3.50*	4.00*
Diver Tender	32.69	33.19	3.50*	4.00*

*To be allocated at a later date

NOTE ADDITIONAL AMOUNTS PAID FOR THE FOLLOWING WORK LISTED BELOW (per hour worked):
- Pile Drivers/Dock Builders shall receive $0.25 per hour over the journeyworker's rate of pay when performing piledriving/dock building work.
- Certified welders shall receive $1.00 per hour over the journeyworker's rate of pay when the employee is required to be certified and performs DOT or ABS specified welding work (Effective 7/1/2026 premium increases to $3.00/hr and will include premium when AWS certification is required).
- When an employee performs work within a contaminated area on a State and/or Federally designated hazardous waste site, and where relevant State and/or Federal regulations require employees to be furnished and use or wear required forms of personal protection, then the employee shall receive his regular hourly rate plus $1.50 per hour.
- Depth pay for Divers based upon deepest depth on the day of the dive (per diem payment):
  0' to 80' no additional fee
  81'to 100' additional $.50 per foot
  101'to 150' additional $0.75 per foot
  151'and deeper additional $1.25 per foot
- Penetration pay for Divers based upon deepest penetration on the day of the dive (per diem payment):
  0' to 50' no additional fee
  51' to 100' additional $.75 per foot
  101' and deeper additional $1.00 per foot
- Diver rates applies to all hours worked on dive day.

SHIFT WORK
On Agency/Owner mandated shift work, the following rates will be applicable:
1st Shift - Regular Rate
2nd Shift - Premium of 7% of base wage per hour (Effective 7/1/2026 premium increases to 10%)
3rd Shift - Premium of 14% of base wage per hour (Effective 7/1/2026 premium increases to 15%)
Shift work shall be defined as implementing at least two (2) shifts in a twenty-four (24) consecutive hour period. Shift work must be for a minimum of three (3) consecutive days.

SUPPLEMENTAL BENEFITS
Per hour:

	07/01/2025	01/01/2026
Journeyworker	$ 22.07	$ 22.07

OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
Note: Any holiday which occurs on Sunday shall be observed the following Monday. If Christmas falls on a Saturday, it shall be observed on the prior Friday.

REGISTERED APPRENTICES
Wages per hour (1300 hour terms at the following percentage of Journeyworker's base wage):

1st	2nd	3rd	4th
65%	70%	75%	80%

Supplemental Benefits per hour:

$ 12.55	$ 12.55	$ 15.15	$ 15.15

NOTE ADDITIONAL AMOUNTS PAID TO APPRENTICES FOR THE FOLLOWING WORK LISTED BELOW (per hour worked):
- Pile Driving/Dock Builder apprentices shall receive an additional $0.25 per hour worked when performing piledriving/dock building work.
- Certified Welders shall receive $1.00 per hour over the apprentices rate of pay when the apprentice is required to be certified and performs DOT or ABS specified welding work (Effective 7/1/2026 premium increases to $3.00/hr and will include premium when AWS certification is required).
- When an apprentice performs work within a contaminated area on a State and/or Federally designated hazardous waste site, and where relevant State and/or Federal regulations require the apprentice to be furnished and use or wear required forms of personal protection, then the apprentice shall receive his regular hourly rate plus $1.50 per hour.

2-277B-Bro

Carpenter - Building / Heavy&Highway 04/01/2026

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:	07/01/2025	07/01/2026 Additional	07/01/2027 Additional
Carpenter - ONLY for Artificial Turf/Synthetic Sport Surface	$ 37.94	$ 2.25*	$ 2.25*

* To be allocated at a later date.

Note - Does not include the operation of equipment. Please see Operating Engineers rates.

SUPPLEMENTAL BENEFITS
Per hour worked:

Journeyworker	$ 27.34

OVERTIME PAY
See (B, E, Q) 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. Whan 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 (1300 hour terms at the following percentage of Journeyworker's wage):

1st	2nd	3rd	4th
65%	70%	75%	80%

Supplemental Benefits per hour worked:

$19.10	$19.69	$21.83	$22.42

2-42AtSS

Carpenter - Heavy&Highway 04/01/2026

JOB DESCRIPTION Carpenter - Heavy&Highway **DISTRICT** 2

ENTIRE COUNTIES
Broome, Cayuga, Chemung, Cortland, Delaware, Jefferson, Lewis, Onondaga, Oswego, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Yates

WAGES

Per hour	07/01/2025	07/01/2026 Additional	07/01/2027 Additional
Carpenter	$ 39.52	$ 2.00*	$ 4.42*
Piledriver	39.52	2.00*	4.42*
Dockbuilder	39.52	2.00*	4.42*
Diver-Wet Day	64.52	2.00*	4.42*
Diver-Dry Day	40.52	2.00*	4.42*
Diver-Tender	40.52	2.00*	4.42*

*To be allocated at a later date.

NOTE ADDITIONAL AMOUNTS PAID FOR THE FOLLOWING WORK LISTED BELOW (per hour worked):
- State or Federal designated hazardous site, requiring protective gear shall be an additional $2.50 per hour.
- Certified welders when required to perform welding work will receive an additional $5.00 per hour.

ADDITIONAL NOTES PERTAINING TO DIVERS/TENDERS:
- Divers and Tenders shall receive one and one half (1 1/2) times their regular diver and tender rate of pay for Effluent and Slurry diving.
- Divers and tenders being paid at the specified rate for Effluent and Slurry diving shall have all overtime rates based on the specified rate plus the appropriate overtime rates (one and one half or two times the specified rate for Slurry and Effluent divers and tenders).
- The pilot of an ADS or submersible will receive one and one-half (1 1/2) times the Diver-Wet Day Rate for time submerged.
- All crew members aboard a submersible shall receive the Diver-Wet Day rate.
- Depth pay for Divers based upon deepest depth on the day of the dive (per diem payment):
  - 0' to 50' no additional fee
  - 51' to 100' additional $0.50 per foot
  - 101' to 150' additional $0.75 per foot
  - 151' to 200' additional $1.25 per foot
  - 201' and deeper additional $1.50 per foot
- Penetration pay for Divers based upon deepest penetration on the day of the dive (per diem payment):
  - 0' to 50' no additional fee
  - 51' to 100' additional $0.75 per foot
  - 101' to 200' additional $1.00 per foot
  - Over 201' additional $1.25 per foot
- Diver rates applies to all hours worked on dive day.

SHIFT WORK
When project owner mandates a single irregular work shift, the Journeyworkers and Apprentices will receive an additional $4.00 per hour. A single irregular work shift can start any time from 5:00 p.m. to 1:00 a.m.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 27.31

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
- In the event a Holiday falls on a Saturday, the Friday before will be observed as a Holiday. If a Holiday falls on a Sunday, then Monday will be observed as a Holiday.
- The employee must work their scheduled workday before and their scheduled workday after the holiday to receive holiday pay.

REGISTERED APPRENTICES
CARPENTER/PILEDRIVER/DOCKBUILDER APPRENTICES
Wages per hour (1300 hour terms at the following percentage of journeyworker's base wage):

1st	2nd	3rd	4th
65%	70%	75%	80%

Supplemental Benefits per hour:

$ 19.07	$ 19.66	$ 21.75	$ 22.34

NOTE ADDITIONAL AMOUNTS PAID PER HOUR WORKED TO APPRENTICES FOR SPECIFIC TYPES OF WORK PERFORMED:
- State or Federal designated hazardous site, requiring protective gear shall be an additional $2.50 per hour.
- Certified welders when required to perform welding work will receive an additional $5.00 per hour.

2-277HH-Bro

Electrician 04/01/2026

JOB DESCRIPTION Electrician **DISTRICT** 2

ENTIRE COUNTIES
Broome

PARTIAL COUNTIES
Chenango: Entire County except the Townships of Columbus, New Berlin and Sherburne.
Delaware: Only the Townships of Davenport, Delhi, Deposit, Franklin, Hamden, Masonville, Meredith, Sidney, Tompkins and Walton Townships,and that portion of Colchester and Hancock Townships north of the east branch of the Delaware River.
Otsego: Only the Townships of Butternuts, Hartwick, Laurens, Maryland, Milford, Morris, Oneonta, Otego, Unadilla and Westford.
Tioga: Only the Townships of Berkshire, Newark Valley, Owego, Richford and Tioga.

WAGES

Per hour:	07/01/2025
Electrician (base wage)	$ 42.68
Cable Splicer	50.43

ADDITIONAL AMOUNTS FOR SPECIFIC TYPES OF JOBSITE CONDITIONS (amount subject to any overtime premiums):
Additional $ 0.50 per hour when required to work underground, such as in tunnels for roads, railroads, or water.
Additional $ 0.50 per hour when required to work at a height of 40 feet above the ground or roof level.

SHIFT WORK

When shift work is mandated in the job specifications or by the contracting agency, the following journeyworker hourly rates apply. The starting hours of a shift may be adjusted up to two (2) hours in order to meet the needs of the contracting agency.

Between the hours of 8:00AM and 4:30PM	$ 42.68
Between the hours of 4:30PM and 1:00AM	50.06
Between the hours of 12:30AM and 9:00AM	56.08

SUPPLEMENTAL BENEFITS

Per hour:	
Journeyworker	$ 31.78 plus 3% of wage

OVERTIME PAY
See (B, *E, Q) on OVERTIME PAGE
*Double time after 8 hours on Saturday.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, *8, 16) on HOLIDAY PAGE
When a dated holiday falls on a Saturday it shall be celebrated on Friday. When a dated holiday falls on a Sunday, it shall be celebrated on Monday.
*Good Friday may be celebrated the following Monday by mutual agreement of Employer and Employees.

REGISTERED APPRENTICES
WAGES: Terms at the following percentages of Journeyworker's wage.

1st	2nd	3rd	4th	5th
0-2000 Hrs	2000-3500 Hrs	3500-5000 Hrs	5000-6500 Hrs	6500-8000 Hrs
45%	50%	58%	68%	78%

ADDITIONAL AMOUNTS FOR SPECIFIC TYPES OF JOBSITE CONDITIONS (amount subject to any overtime premiums):
Additional $ 0.50 per hour when required to work underground, such as in tunnels for roads, railroads, or water.
Additional $ 0.50 per hour when required to work at a height of 40 feet above the ground or roof level.

SUPPLEMENTAL BENEFITS per hour:

07/01/2025	
1st term	$ 10.25 plus 3% of the hourly wage
2nd term	$ 27.12 plus 3% of the hourly wage

All other terms $ 27.83 plus 3% of the hourly wage

2-325

Elevator Constructor 04/01/2026

JOB DESCRIPTION Elevator Constructor **DISTRICT** 6

ENTIRE COUNTIES
Broome, Cayuga, Chenango, Cortland, Franklin, Jefferson, Lewis, Onondaga, Oswego, St. Lawrence, Tioga, Tompkins

PARTIAL COUNTIES
Delaware: Only the towns of: Tompkins, Walton, Masonville, Sidney, Franklin and Deposit.
Madison: Only the towns of: Cazenovia, DeRuyter, Eaton, Fenner, Georgetown, Lebanon, Lenox, Nelson and Sullivan.
Oneida: Only the towns of: Camden, Florence and Vienna.

WAGES

Per hour:	07/01/2025	01/01/2026	01/01/2027
Mechanic	$ 58.44	$ 60.99	$ 63.719
Helper	40.91	42.69	44.60

SUPPLEMENTAL BENEFITS

Per hour:			
Journeyworker	$ 38.435*	$ 38.985*	39.535*

*NOTE - add 6% of regular hourly rate for all hours worked. Add 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 holiday falls on a Saturday, it shall be observed on Friday. When a holiday falls on Sunday, it shall be observed on Monday.

REGISTERED APPRENTICES
WAGES per hour: 1 year terms at the following percentage of the Elevator Constructor wage.

0-6 months	6-12 months	2nd year	3rd year	4th year
50%	55%	65%	70%	80%

SUPPLEMENTAL BENEFITS per hour:

0-6 months: 6% of the hourly apprentice rate paid, no additional supplemental benefits.

All other terms: Same as Journeyworker

6-62.1

Glazier 04/01/2026

JOB DESCRIPTION Glazier **DISTRICT** 5

ENTIRE COUNTIES
Broome, Chemung, Chenango, Delaware, Otsego, Schuyler, Steuben, Tioga, Tompkins

WAGES

Per hour:	07/01/2025
Glazier	$ 30.00

SUPPLEMENTAL BENEFITS

Per hour:	
Journeyman	$ 33.15

OVERTIME PAY
See (B, E*, E2, Q**) on OVERTIME PAGE.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
1000 hour terms

Appr. 1st term	$ 20.00
Appr. 2nd term	21.00
Appr. 3rd term	22.00
Appr. 4th term	23.00
Appr. 5th term	24.00
Appr. 6th term	25.00
Appr. 7th term	26.00
Appr. 8th term	27.00

Supplemental Benefits per hour:

Appr. 1st term	$ 13.27
Appr. 2nd term	13.27
Appr. 3rd term	19.27
Appr. 4th term	19.27
Appr. 5th term	20.27
Appr. 6th term	20.27
Appr. 7th term	21.27
Appr. 8th term	21.27

5-677z3

Insulator - Heat & Frost — 04/01/2026

JOB DESCRIPTION Insulator - Heat & Frost **DISTRICT** 7

ENTIRE COUNTIES
Broome, Cayuga, Chemung, Chenango, Cortland, Herkimer, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, Otsego, Schuyler, Seneca, St. Lawrence, Tioga, Tompkins

WAGES
Per hour: 07/01/2025

Asbestos Installer	$ 43.25
Insulation Installer	43.25
(On mechanical systems only)	

SHIFT WORK
The following rates will apply on all contracting agency-mandated shifts worked:

1st Shift	$ 43.25
2nd Shift	49.74
3rd Shift	51.90

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 27.34

OVERTIME PAY
See (*B1, **K, P) on OVERTIME PAGE
*NOTE: First 10 hours on Saturday.
**NOTE: Holidays that fall on Sunday are subject to double time.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (2*,4,6,28) on HOLIDAY PAGE
*Triple time for Labor Day if worked.

REGISTERED APPRENTICES
WAGES per hour: One (1) year terms at the following percentage of Journeyworker's wage.

1st	2nd	3rd	4th
60%	70%	80%	90%

SUPPLEMENTAL BENEFITS per hour:

$ 24.09	$ 24.09	$ 27.34	$ 27.34

7-30-Syracuse

Ironworker — 04/01/2026

JOB DESCRIPTION Ironworker **DISTRICT** 6

ENTIRE COUNTIES
Broome, Cayuga, Cortland, Onondaga, Oswego, Seneca, Tioga, Tompkins

PARTIAL COUNTIES
Chenango: Only the townships of Afton, Bainbridge, Coventry, German, Greene, Guilford, Lincklaen, McDonough, Norwich, Otselic, Oxford, Pharsalia, Pitcher, Preston and Smithville.
Jefferson: Only the townships of Adams, Alexandria, Brownville, Cape Vincent, Clayton, Ellisburg, Henderson, Hounsfield, LeRay, Lorraine, Lyme, Orleans, Pamelia, Rodman, Rutland, Theresa, Watertown and Worth.
Madison: Only the townships of Cazenovia, DeRuyter, Fenner, Georgetown, Lenox, Lincoln, Nelson, Smithfield and Sullivan.
Schuyler: Only the townships of Cayuta, Catharine, Hector and Montour.
Wayne: Only the townships of Butler, Galen, Huron, Rose, Savannah and Wolcott.

WAGES
Structural, Reinforcing, Re-bar, Machinery Mover & Rigger, Ornamental & Curtain Wall, Window Wall, Pre-Glazed Metal Framed Windows Attached to Steel or Masonry Including Caulking, Fence Erector (Chain Link/Security), Sheeter/Bridge Rail, Pre-Cast Erector, Stone Derrickman, Pre-Engineered Building Erector, Welder

Per hour:	07/01/2025	07/01/2026 Additional
Ironworker	$ 37.16	$ 2.76*

* To be allocated at a later date.

SHIFT WORK
Multiple shifts mandated by the project owner. All shifts will be eight (8) hours.

1st Shift	$ 37.16	
2nd Shift	40.88	Starting times between 2PM and 7PM
3rd Shift	42.73	Starting times between 7PM and 12AM

WHEN A SINGLE IRREGULAR SHIFT IS WORKED, WITH START TIMES BASED ON SECOND AND THIRD SHIFTS, ADD 10% TO THE 1ST SHIFT WAGE RATE POSTED ABOVE.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 31.88

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: Any holiday which occurs on Saturday shall be observed on the preceding Friday. Any holiday which occurs on Sunday shall be observed the following Monday.

REGISTERED APPRENTICES
WAGES per hour: One year terms at the following rates.

1st	2nd	3rd	4th
$ 21.50	$ 23.50	$ 25.50	$ 27.50

SUPPLEMENTAL BENEFITS per hour:

1st year	$ 13.03
2nd year	21.36
3rd year	22.55
4th year	23.74

6-60

Laborer - Building 04/01/2026

JOB DESCRIPTION Laborer - Building **DISTRICT** 2

ENTIRE COUNTIES
Broome, Chemung, Cortland, Schuyler, Steuben, Tioga, Tompkins

PARTIAL COUNTIES
Chenango: Entire County except the Townships of Sherburne, Columbus and New Berlin.
Delaware: Only the Townships of Sidney, Masonville, Walton, Tompkins, Deposit, Hancock, and Colchester.

WAGES
Per hour:

GROUP #1: Basic Laborer - excavation, concrete vibrator, power-driven buggie, demolition (including acetylene torch work) that is customarily done by a laborer

GROUP #2: Air Tool Operators, Mason Tenders

GROUP #3: Blaster, Rock Drill (compressor driven)

GROUP #4: Asbestos, Hazardous, Toxic Waste, Lead and Mold Remediation

	07/01/2025	07/01/2026 Additional
GROUP #1	$ 30.00	$ 1.25*
GROUP #2	31.00	1.25*
GROUP #3	32.00	1.25*
GROUP #4	32.00	1.25*

*To be allocated at a later date.

IMPORTANT NOTES:
- Laborer tasks on Renewable Energy and Green Energy construction work shall be paid at the appropriate Heavy & Highway rates.
- Wage and supplement rates for the operation of forklift and skid steer may be found under the classification "Operating Engineer".

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 20.20

OVERTIME PAY
See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
When a holiday falls on Sunday, it shall be observed on the following Monday.

REGISTERED APPRENTICES
WAGES: 1000 hour terms at the following percentage of Journeyworker's wage.

1st	2nd	3rd	4th
70%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

1st term	$ 15.85
2nd term	17.10
3rd term	17.98
4th term	18.85

2-785b

Laborer - Heavy&Highway **04/01/2026**

JOB DESCRIPTION Laborer - Heavy&Highway **DISTRICT** 2

ENTIRE COUNTIES
Broome, Chemung, Cortland, Schuyler, Steuben, Tioga, Tompkins

PARTIAL COUNTIES
Chenango: Entire County except the Townships of Sherburne, Columbus, and New Berlin.
Delaware: Only the Townships of Sidney, Masonville, Walton, Tompkins, Deposit, Hancock and Colchester.

WAGES
Per hour:

GROUP A: Drill Helper, Flagman, Outboard and Hand Boats.

GROUP B: Basic Rate, Bull Float (where used for strike off only), Chain Saw, Concrete Aggregate Bin, Concrete Bootmen, Gin Buggy, Hand or Machine Vibrator, Jack Hammer, Mason Tender, Mortar Mixer, Pavement Breaker, Handlers of Steel Mesh, Small Generators for Laborers Tools, Installation of Bridge Drainage Pipe, Pipe Layers, Vibrator Type Rollers, Tamper, Drill Doctor, Water Pump Operators (1-1/2" & Single Diaphragm), Nozzle (Asphalt, Gunite, Seeding, and Sand Blasting), Laborers on Chain Link Fence Erection, Rock Splitter and Power Unit, Pusher Type Concrete Saw and all other Gas, Electric, and Air Tool Operators, Wrecking Laborer.

GROUP C: Drilling equipment - only where a separate air compressor unit supplies power, Acetylene Torch Operators, Asphalt Raker, Powder Man, Tail or Screw Operator on Asphalt Paver.

GROUP D: Blasters, Form Setters (slab steel forms on highways, roads, streets & airport runways), Stone or Granite Curb Setters.

GROUP E: Hazardous Waste defined as when an employee performs hazardous waste removal, lead abatement and removal, asbestos abatement and removal work on State and/or Federally designated waste site and were relevant State and/or Federal regulations require employees to use or wear required forms of personal protection.

	07/01/2025	07/01/2026 Additional	07/01/2027 Additional
GROUP A	$ 38.06	$ 3.40*	$ 4.20*
GROUP B	38.26	3.40*	4.20*
GROUP C	38.46	3.40*	4.20*
GROUP D	38.66	3.40*	4.20*
GROUP E	43.26	3.40*	4.20*

*To be allocated at a later date.

IMPORTANT NOTES:
- Laborer tasks on Renewable Energy and Green Energy construction work shall be paid at the appropriate Heavy & Highway rates.
- Wage and supplement rates for the operation of forklift and skid steer may be found under the classification "Operating Engineer".
- When an employee is required by the employer and/or by the material data safety sheets of a product, during its application, to wear a half or full-face replaceable cartridge respirator for more than (2) hours, then in such case said employee(s) will be paid the Group E rate for the shift.

SHIFT WORK
A single irregular work shift starting any time between 5:00 PM and 1:00 AM on governmental mandated night work shall be paid an additional $5.00 per hour.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker $ 26.35

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
- If Holiday falls on Sunday, it will be celebrated on Monday. If the Holiday falls on Saturday, it will be celebrated on Saturday.
- An Employee must work the scheduled working day before and the scheduled working day after a holiday to receive holiday pay.

REGISTERED APPRENTICES
WAGES: 1000 hour terms at the following percentage of Journeyworker's GROUP B wage:

1st	2nd	3rd	4th
70%	80%	90%	95%

SUPPLEMENTAL BENEFITS per hour:
All terms $ 26.35

2-785h

Laborer - Tunnel 04/01/2026

JOB DESCRIPTION Laborer - Tunnel **DISTRICT** 2

ENTIRE COUNTIES
Broome, Chemung, Cortland, Schuyler, Steuben, Tioga, Tompkins

PARTIAL COUNTIES
Chenango: Entire County except the Townships of Sherburne, Columbus, and New Berlin.
Delaware: Only the Townships of Sidney, Masonville, Walton, Tompkins, Deposit, Hancock and Colchester.

WAGES
Per hour:

GROUP A: Change House Man

GROUP B: Miners and all Machine Men, Safety Miner, All Shaft work, Caisson work, Drilling, Blow Pipe, all Air Tools, Tugger, Scaling, Nipper, Guniting pot to nozzle, Bit Grinder, Signal Man (top and bottom), Concrete Man, Shield Driven Tunnels, mixed face and soft ground, liner plate tunnels in free air.

GROUP C: Blaster

GROUP D: Hazardous waste removal work on a State and/or Federally designated waste site where relevant State and/or Federal regulations require employees to use or wear required forms of personal protection.

	07/01/2025	07/01/2026 Additional	07/01/2027 Additional
Group A	$ 41.24	$ 3.40*	$ 4.20*
Group B	41.44	3.40*	4.20*
Group C	44.24	3.40*	4.20*
Group D	46.24	3.40*	4.20*

*To be allocated at a later date

IMPORTANT NOTES:
- When an employee is required by the employer and/or by the material data safety sheets of a product, during its application, to wear a half or full face replaceable cartridge respirator for more then (2) hours, then in such case said employee(s) will be paid the Group D rate for the shift.

SHIFT WORK
A single irregular work shift starting any time between 5:00 PM and 1:00 AM on governmental mandated night work shall be paid an additional $5.00 per hour.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker $ 26.35

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE
- If Holiday falls on Sunday, it will be celebrated on Monday. If the Holiday falls on Saturday, it will be celebrated on Friday.

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
If the holiday falls on Saturday, it will be celebrated on Friday. If the holiday falls on Sunday, it will be celebrated on Monday

REGISTERED APPRENTICES
WAGES: 1000 hour terms at the following percentage of Group B wage

1st	2nd	3rd	4th
70%	80%	90%	95%

SUPPLEMENTAL BENEFITS per hour:

All Terms $ 26.35

2-785T

Lineman Electrician — 04/01/2026

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
A 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, assembly of all electrical materials, conduit, pipe, 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.

Crane Operators: Operation of any type of crane on line projects.
Crawler Backhoe: Operation of tracked excavator/crawler backhoe with 1/2 yard bucket or larger on line projects.
Digging Machine Operator: All other digging equipment and augering on line projects.

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.

NOTE: Includes Teledata Work within ten (10) feet of High Voltage Transmission Lines. Also includes digging of holes for poles, anchors, footer, and foundations for electrical equipment.

-----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. Includes access matting for line work.

Per hour:	07/01/2025	05/04/2026	05/03/2027	05/01/2028
Group A:				
Lineman, Technician	$ 61.56	$ 64.37	$ 66.84	$ 69.47
Crane, Crawler Backhoe	61.56	64.37	66.84	69.47
Welder, Cable Splicer	61.56	64.37	66.84	69.47
Group B:				
Digging Mach. Operator	$ 55.40	$ 57.93	$ 60.16	$ 62.52
Group C:				
Tractor Trailer Driver	$ 52.33	$ 54.71	$ 56.81	$ 59.05
Groundman, Truck Driver	49.25	51.50	53.47	55.58
Equipment Mechanic	49.25	51.50	53.47	55.58
Group D:				
Flagger	$ 33.86	$ 35.40	$ 36.76	$ 38.21

Additional 3% per hour above regular rate for entire crew when a helicopter is used. This will increase to 5% on May 03, 2027.

-----Below rates applicable on all electrical sub-stations, switching structures, fiber optic cable and all other work not defined as "Utility outside electrical work." Includes access matting for line work.

Group A:				
Lineman, Technician	$ 61.56	$ 64.37	$ 66.84	$ 69.47
Crane, Crawler Backhoe	61.56	64.37	66.84	69.47
Cable Splicer	67.72	70.81	73.52	76.42
Certified Welder, Pipe Type Cable	$ 64.64	$ 67.59	$ 70.18	$ 72.94
Group B:				
Digging Mach. Operator	$ 55.40	$ 57.93	$ 60.16	$ 62.52
Group C:				
Tractor Trailer Driver	$ 52.33	$ 54.71	$ 56.81	$ 59.05
Groundman, Truck Driver	49.25	51.50	53.47	55.58
Equipment Mechanic	49.25	51.50	53.47	55.58
Group D:				
Flagger	$ 33.86	$ 35.40	$ 36.76	$ 38.12

Additional 3% per hour above regular rate for entire crew when a helicopter is used. This will increase to 5% on May 03, 2027.

-----Below rates applicable on all switching structures, maintenance projects, railroad catenary install/maintenance third rail installation, bonding of rails and pipe type cable and installation of fiber optic cable. Includes access matting for line work.

Group A:				
Lineman, Tech, Welder	$ 62.94	$ 65.81	$ 68.34	$ 71.03
Crane, Crawler Backhoe	62.94	65.81	68.34	71.03
Cable Splicer	69.23	72.39	75.17	78.13
Certified Welder, Pipe Type Cable	66.09	69.10	71.76	74.58

Group B:				
Digging Mach. Operator	$ 56.65	$ 59.23	$ 61.51	$ 63.93
Group C:				
Tractor Trailer Driver	$ 53.50	$ 55.94	$ 58.09	$ 60.38
Groundman, Truck Driver	50.35	52.65	54.67	56.82
Equipment Mechanic	50.35	52.65	54.67	56.82
Group D:				
Flagger	$ 34.62	$ 36.20	$ 37.59	$ 39.07

Additional 3% per hour above regular rate for entire crew when a helicopter is used. This will increase to 5% on May 03, 2027.

-----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. Includes access matting for line work.

Group A:				
Lineman, Tech, Welder	$ 64.18	$ 67.10	$ 69.68	$ 72.43
Crane, Crawler Backhoe	64.18	67.10	69.68	72.43
Group B:				
Digging Mach. Operator	$ 57.76	$ 60.39	$ 62.71	$ 65.19
Group C:				
Tractor Trailer Driver	$ 54.55	$ 57.04	$ 59.23	$ 61.57
Groundman, Truck Driver	51.34	53.68	55.74	57.94
Equipment Mechanic	51.34	53.68	55.74	57.94
Group D:				
Flagger	$ 35.30	$ 36.91	$ 38.32	$ 39.84

Additional 3% per hour above regular rate for entire crew when a helicopter is used. This will increase to 5% on May 03, 2027.

SHIFT WORK

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 %

SUPPLEMENTAL BENEFITS

Per hour:

	07/01/2025	05/04/2026	05/03/2027	05/01/2028
Group A	$ 31.90*	$ 32.90*	$ 34.40*	$ 35.90*
Group B	$ 27.90*	$ 28.90*	$ 30.40*	$ 31.90*
Group C	$ 27.70*	$ 28.50*	$ 29.70*	$ 30.90*
Group D	$ 27.65*	$ 28.40*	$ 29.53*	$ 30.66*

*Plus 7 % of the hourly wage paid. The 7% is based on straight time or premium time.

OVERTIME PAY

See (B, E, Q, X) on OVERTIME PAGE. NOTE: Double time for all emergency work designated by the Dept. of Jurisdiction.
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, 25) on HOLIDAY PAGE
Overtime	See (5, 6, 8, 15, 25) on HOLIDAY PAGE

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 Journeyworker's Lineman wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

	07/01/2025	05/04/2026	05/03/2027	05/01/2028
All terms:	$ 27.65*	$ 28.40*	$ 29.53*	$ 30.66*

*Plus 7% of the hourly wage paid. The 7% is based on straight time or premium time.

6-1249a

Lineman Electrician - Teledata — 04/01/2026

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
NOTE: Applies to all public work and covered private projects, including those receiving ConnectAll funding subject to LL 224-E,solicited prior to July 1, 2025. For all projects, excluding dial-up internet access service, solicited on or after July 1, 2025, please see BROADBAND

Per hour:	07/01/2025
Cable Splicer	$ 40.81
Installer, Repairman	$ 38.73
Teledata Lineman	$ 38.73
Tech., Equip. Operator	$ 38.73
Groundman/Flagger	$ 20.53

For outside work, stopping at first point of attachment (demarcation).

NOTE: EXCLUDES Teledata work within ten (10) feet of High Voltage (600 volts and over) transmission lines. For this work, please see LINEMAN.

SHIFT WORK
THE FOLLOWING RATES APPLY WHEN THE CONTRACTING AGENCY MANDATES MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION ARE WORKED. WHEN TWO (2) OR THREE (3) SHIFTS ARE WORKED THE FOLLOWING RATES APPLY:

1ST SHIFT	REGULAR RATE
2ND SHIFT	REGULAR RATE PLUS 10%
3RD SHIFT	REGULAR RATE PLUS 15%

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 5.77 *plus 3% of the hour 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
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 — 04/01/2026

JOB DESCRIPTION Lineman Electrician - Traffic Signal, Lighting **DISTRICT** 6

ENTIRE COUNTIES
Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, 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, Warren, Washington, Wayne, Wyoming, Yates

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.

Crane Operators: Operation of any type of crane on Traffic Signal/Lighting projects.
Crawler Backhoe: Operation of tracked excavator/crawler backhoe with 1/2 yard bucket or larger on Traffic Signal/Lighting projects.
Digging Machine Operator: All other digging equipment and augering on Traffic Signal/Lighting projects.

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.

Per hour:	07/01/2025	05/04/2026	05/03/2027	05/01/2028
Group A:				
Lineman, Technician	$ 52.86	$ 55.31	$ 57.40	$ 59.64
Crane, Crawler Backhoe	52.86	55.31	57.40	59.64
Certified Welder	55.50	58.08	60.27	62.62
Group B:				
Digging Machine	$ 47.57	$ 49.78	$ 51.66	$ 53.68
Group C:				
Tractor Trailer Driver	$ 44.93	$ 47.01	$ 48.79	$ 50.69
Groundman, Truck Driver	42.29	44.25	45.92	47.71
Equipment Mechanic	42.29	44.25	45.92	47.71
Group D:				
Flagger	$ 31.72	$ 33.19	$ 34.44	$ 35.78

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.

SHIFT WORK

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%

SUPPLEMENTAL BENEFITS

Per hour worked:

	07/01/2025	05/04/2026	05/03/2027	05/01/2028
Group A	$ 31.90*	$ 32.90*	$ 34.40*	$ 35.90*
Group B	$ 27.90*	$ 28.90*	$ 30.40*	$ 31.90*
Group C	$ 27.70*	$ 28.50*	$ 29.70*	$ 30.90*
Group D	$ 27.65*	$ 28.40*	$ 29.53*	$ 30.66*

* Plus 7% of the hourly wage paid. The 7% is based on straight time or premium time.

OVERTIME PAY

See (B, E, Q, X) on OVERTIME PAGE. NOTE: Double time for all emergency work designated by the Dept. of Jurisdiction.
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, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 15, 25) on HOLIDAY PAGE
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 Journeyworker's Lineman wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

	07/01/2025	05/04/2026	05/03/2027	05/01/2028
All terms:	$ 27.65*	$ 28.40*	$ 29.53*	$ 30.66*

* Plus 7% of the hourly wage paid. The 7% is based on straight time or premium time.

6-1249a-LT

Lineman Electrician - Tree Trimmer — 04/01/2026

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 includes stump removal near underground energized electrical lines including telephone and CATV lines.

Per hour:	07/01/2025	01/01/2026	01/04/2026	01/03/2027
Tree Trimmer	$ 33.18	$ 33.18	$ 34.67	$ 36.23
Equipment Operator	29.35	29.35	30.67	32.05
Equipment Mechanic	29.35	29.35	30.67	32.05
Truck Driver	23.85	23.85	24.93	26.05
Groundman	19.64	19.64	20.53	21.45
Flagger	15.50	16.00	16.20	16.93

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 10.98*	$ 10.98*	$ 11.23*	$ 11.48*

* Plus 4.5% of the hourly wage paid. The 4.5% is based on straight time rate or premium rate.

OVERTIME PAY
See (B, E, Q, X) on OVERTIME PAGE
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, 16, 25) 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 — 04/01/2026

JOB DESCRIPTION Mason - Building **DISTRICT** 5

ENTIRE COUNTIES
Broome, Chenango, Delaware, Otsego, Tioga

WAGES

Per hour:	07/01/2025
Building:	
Bricklayer, Cement	$ 34.34

Mason, Plasterer, Stone
Mason, Tuck Pointer

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 29.76

OVERTIME PAY
See (B,E,E2*,Q) on OVERTIME PAGE
*Note - Or other conditions beyond the employer's control such as fire or natural disaster.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:

One year terms at the following rates:

1st	2nd	3rd	4th
$ 21.89	$ 27.04	$ 28.22	$ 30.91

Supplemental benefits per hour:

1st	2nd	3rd	4th
$ 23.69	$ 24.70	$ 27.64	$ 29.07

5-3B - Bing - Z2

Mason - Heavy&Highway 04/01/2026

JOB DESCRIPTION Mason - Heavy&Highway **DISTRICT** 5

ENTIRE COUNTIES
Allegany, Broome, Chautauqua, Chemung, Chenango, Cortland, Delaware, Genesee, Livingston, Monroe, Ontario, Orleans, Otsego, Schuyler, Seneca, Steuben, Tioga, Tompkins, Wayne, Wyoming, Yates

PARTIAL COUNTIES
Cattaraugus: Enitre county except in the Township of Perrysburg and the Village of Gowanda only the Bricklayer classification applies.
Erie: Only the Bricklayer classification applies.
Niagara: Only the Bricklayer classification applies.

WAGES
Per hour: 07/01/2025
Heavy & Highway:

Cement Mason	$ 38.63
Bricklayer	38.63

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 26.28

OVERTIME PAY
See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:

1500 hour terms at the following percentage of Journeyman's wage:

1st	2nd	3rd	4th
50%	60%	70%	80%

Supplemental benefits per hour:

1st term	$ 15.40
2nd term	$ 24.62
3rd term	$ 25.04

4th term $ 25.45

5-3h

Mason - Tile Finisher 04/01/2026

JOB DESCRIPTION Mason - Tile Finisher **DISTRICT** 5

ENTIRE COUNTIES
Broome, Chemung, Chenango, Cortland, Delaware, Otsego, Schuyler, Steuben, Tioga, Tompkins

PARTIAL COUNTIES
Allegany: Towns of Alfred, Almond, Andover and Burns in Allegany County

WAGES
Wages
Per hour: 07/01/2025
Building:
Marble, Slate, Terrazzo and Tile Finisher $ 32.45

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman $ 23.52

OVERTIME PAY
See (B,E,E2*,Q) on OVERTIME PAGE
*Note - Or other conditions beyond the employer's control such as fire or natural disaster.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:

One year terms at the following wage:

1st	2nd	3rd
$ 19.47	$ 22.72	$ 25.96

Supplemental benefits per hour:

1st	2nd	3rd
$ 15.12	$ 15.72	$ 20.37

5-3TF - Z4

Mason - Tile Setter 04/01/2026

JOB DESCRIPTION Mason - Tile Setter **DISTRICT** 5

ENTIRE COUNTIES
Broome, Chemung, Chenango, Cortland, Delaware, Otsego, Schuyler, Steuben, Tioga, Tompkins

PARTIAL COUNTIES
Allegany: Towns of Alfred, Almond, Andover and Burns.

WAGES
Wages
Per Hour: 07/01/2025
Building:
Marble, Slate, Terrazzo and Tile Setter $ 34.69

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman $ 27.06

OVERTIME PAY
See (B,E,E2*,Q) on OVERTIME PAGE
*Note - Or other conditions beyond the employer's control such as fire or natural disaster.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:

One year terms at the following wage:

1st	2nd	3rd	4th
$ 20.81	$ 24.28	$ 27.75	$ 31.22

Supplemental benefits per hour:

1st	2nd	3rd	4th
$ 15.59	$ 16.26	$ 25.70	$ 26.38

5-3TS - Z4

Millwright 04/01/2026

JOB DESCRIPTION Millwright **DISTRICT** 6

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

WAGES
THE FOLLOWING RATE APPLIES TO ANY GAS/STEAM TURBINE AND OR RELATED COMPONENT WORK, INCLUDING NEW INSTALLATIONS OR MAINTENANCE AND ANY/ALL WORK PERFORMED WITHIN THE PROPERTY LIMITS OF A NUCLEAR FACILITY.

Per hour:	07/01/2025
Millwright - Power Generation	$ 47.00

NOTE: ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount subject to any overtime premiums):
- Certified Welders shall receive an additional $1.75 per hour provided they are directed to perform Certified Welding.
- 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) is required, then that employee shall receive an additional $1.50 per hour.
- An employee performing the work of a machinist shall receive an additional $2.00 per hour. 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 per hour.

SUPPLEMENTAL BENEFITS
Per hour paid:

Journeyworker	$ 28.45*

*NOTE: Subject to OT premium

OVERTIME PAY
See (B, E, E2, Q, V) on OVERTIME PAGE

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: One year terms at the following percentage of Journeyworker's wage:

Appr. 1st year	65%*
Appr. 2nd year	75%*
Appr. 3rd year	80%*
Appr. 4th year	90%*

*NOTE: Additional premium for the following work listed below:

Certified Welder	$ 1.75
Hazardous Waste Work	1.50
Machinist	2.00
Underground	1.00

(500' and below)

SUPPLEMENTAL BENEFITS per hour:

Appr. 1st year	$ 11.95
Appr. 2nd year	23.50
Appr. 3rd year	25.15
Appr. 4th year	26.80

6-1163Power

Millwright 04/01/2026

JOB DESCRIPTION Millwright **DISTRICT** 6

ENTIRE COUNTIES
Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Herkimer, Madison, Seneca, Tioga, Yates

WAGES
Per hour: 07/01/2025

Building	$ 38.00
Heavy & Highway	41.50

NOTE: ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount subject to any overtime premiums):
- Certified Welders shall receive an additional $1.75 per hour provided he/she is directed to perform certified welding.
- On Building projects, 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 an additional $1.50 per hour.
- H/H work performed on hazardous waste sites where employees are required to wear protective gear shall receive an additional $2.00 per hour over the Millwright H/H rate for all hours worked on the day protective gear was worn.
- An employee performing the work of a machinist shall receive an additional $2.00 per hour. 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 per hour.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 26.54

OVERTIME PAY
See (B, E, E2, Q) on OVERTIME PAGE

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 a Saturday shall be observed the preceding Friday.

REGISTERED APPRENTICES
WAGES per hour: One year terms at the following percentage of Journeyworker's wage:

Appr. 1st year	65%*
Appr. 2nd year	75%*
Appr. 3rd year	80%*
Appr. 4th year	90%*

*NOTE: Additional premium for the following work listed below:

Certified Welder	$ 1.75
Hazardous Waste (Bldg)	1.50
Hazardous Waste (H/H)	2.00
Machinist	2.00
Underground (500' and below)	1.00

SUPPLEMENTAL BENEFITS per hour:

Appr. 1st year	$ 11.95
Appr. 2nd year	22.16
Appr. 3rd year	23.62
Appr. 4th year	25.08

6-1163 Zone 2

Operating Engineer - Building 04/01/2026

JOB DESCRIPTION Operating Engineer - Building **DISTRICT** 1

ENTIRE COUNTIES
Broome, Chenango, Tioga

PARTIAL COUNTIES
Dutchess: Defined as north of the northern boundary line of City of Poughkeepsie then due east to Route 115 to Bedell Road then east along Bedell Road to VanWagner Road then north along VanWagner Road to Bower Road then east along Bower Road to Rte. 44 east to Route 343 then along Route 343 east to the northern boundary of Town of Dover Plains and east along the northern boundary of Town of Dover Plains to Connecticut.

WAGES
NOTE:
--In the event that equipment listed below is operated by robotic control, the classification covering the operation will be the same as if manually operated.
--If a second employee is required by the employer for operation of any covered machine, they shall be an Engineer Class C

CLASS A1*: All cranes that require NYS crane license, tower cranes**(including self erecting), hydraulic cranes, locomotive crane, piledriver, cableway, derricks, whirlies, dragline, boom trucks, cherry pickers, overhead cranes (gantry or saddle type), truck cranes

CLASS A:
Shovel, Excavators 18,001 lbs. and above(including rubber tire full swing), Gradalls, power road grader, all CMI equipment, front-end rubber tire loader, tractor-mounted drill (quarry master), mucking machine, concrete central mix plant, concrete pump, belcrete system, automated asphalt concrete plant, and tractor road paver, boom trucks 5 tons and under, maintenance engineer, self-contained crawler drill-hydraulic rock drill, Profiler/Milling machine.

CLASS B:
Excavators 18,000 lbs. and under, Backhoes (rubber tired backhoe/loader combination), bulldozer, pushcat, tractor, traxcavator, scraper, LeTourneau grader, form fine grader, self-propelled soil compactor (fill roller), asphalt roller, blacktop spreader, power brooms, sweepers, trenching machine, Barber Green loader, side booms, hydro hammer, concrete spreader, concrete finishing machine, one drum hoist, power hoisting (single drum), hoist two drum or more, three drum engine, power hoisting (two drum and over), two drum and swinging engine, three drum swinging engine, hod hoist, A-L frame winches, core and well drillers (one drum), post hole digger, model CHB Vibro-Tamp or similar machine, batch bin and plant operator, dinky locomotive, skid steer loader, track excavator 5/8 cubic yard or smaller, front end rubber tired loader under four cubic yards, vacum machine (mounted or towed).

CLASS C:
Fork lift, high lift, all terrain fork lift: or similar, oiler, fireman and heavy-duty greaser, boilers and steam generators, pump, vibrator, motor mixer, air compressor, dust collector, welding machine, well point, mechanical heater, generators, temporary light plants, electric submersible pumps 4" and over, murphy type diesel generator, conveyor, elevators, concrete mixer, beltcrete power pack (belcrete system), seeding, and mulching machines, pumps, rotating telehandler (that does not require NYS crane license).

WAGES per hour

	07/01/2025
Class A1*	$ 51.71
Class A	$ 49.31
Class B	$ 48.85
Class C	$ 46.54

(*) TONNAGE RATING PREMIUMS:
Note: Additional value subject to same premiums as shown for OT
All cranes 1000 tons and over, A1 rate plus $7.00
All cranes 800-999 tons, A1 rate plus $6.00
All cranes 600-799 tons, A1 rate plus $5.00
All cranes 400-599 tons, A1 rate plus $4.00
All cranes 200-399 tons, A1 rate plus $3.00
All cranes 111-199 tons, A1 rate plus $2.25
All cranes 110 tons and under, A1 rate only

(**)Additional $0.50 per hr over A1 rate for Tower Cranes (no tonnage premium applies)
Additional $2.50 per hr over B rate for Nuclear Leader work.
Additional $2.50 per hour if work requires Personal Protective Equipment for hazardous waste site activities with a level C or over rating.

SUPPLEMENTAL BENEFITS
Per hour

	07/01/2025
Journeyworker	$ 32.95

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: All hours worked on designated holidays shall be paid a double the hourly rate of pay plus 8 hours of straight time.
NOTE: If a holiday falls on Sunday, it will be celebrated on Monday. If the holiday falls on Saturday, it will be celebrated on Friday.

REGISTERED APPRENTICES
Wages per hour

1000 hours terms at the following percentage of Journeyworker's wage Class B:

1st	2nd	3rd	4th
60%	70%	80%	90%

Supplemental Benefits per hour worked

	07/01/2025
All terms	$ 28.35

1-158 BCT

Operating Engineer - Heavy&Highway — 04/01/2026

JOB DESCRIPTION Operating Engineer - Heavy&Highway **DISTRICT** 1

ENTIRE COUNTIES
Albany, Broome, Chenango, Clinton, Columbia, Essex, Franklin, Fulton, Greene, Hamilton, Herkimer, Montgomery, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Tioga, Warren, Washington

PARTIAL COUNTIES
Dutchess: Defined as north of the northern boundary line of City of Poughkeepsie then due east to Route 115 to Bedell Road then east along Bedell Road to VanWagner Road then north along VanWagner Road to Bower Road then east along Bower Road to Rte. 44 east to Route 343 then along Route 343 east to the northern boundary of Town of Dover Plains and east along the northern boundary of Town of Dover Plains to Connecticut.

WAGES
NOTE:
--- In the event that equipment listed below is operated by robotic control, the classification covering the operation will be the same as if manually operated.
--- If a second employee is required by the employer for operation of any covered machine, they shall be an Engineer Class C

CLASSIFICATION A1*: All Cranes that require a NYS Crane License; tower cranes(including self erecting)**, hydraulic cranes, locomotive crane, piledriver, cableway, derricks, whirlies, dragline, boom trucks, cherry pickers, overhead cranes (gantry or saddle type), truck cranes

CLASSIFICATION A:
Asphalt Curb Machine (Self Propelled, Slipform), Asphalt Paver, Automated Concrete Spreader (CMI Type), Automatic Fine Grader, Backhoe (Except Tractor Mounted, Rubber Tired), Backhoe Excavator Full Swing (CAT 212 or similar type), Back Filling Machine, Belt Placer (CMI Type), Blacktop Plant (Automated), Blacktop Roller, Boom truck, GPS operated Bull Dozer, Cableway, Caisson Auger, Central Mix Concrete Plant (Automated), Concrete Curb Machine (Self Propelled, Slipform), Concrete Pump, Crane, Cherry Picker, Derricks (steel erection), Dragline, Overhead Crane (Gantry or Straddle type), Pile Driver, Truck Crane, Directional Drilling Machine, Dredge, Dual Drum Paver, Excavator (All Purpose Hydraulically Operated) (Gradall or Similar), Front End Loader (4 cu. yd. and Over), Head Tower (Sauerman or Equal), Hoist (Two or Three Drum), Holland Loader, Maintenance Engineer, Mine Hoist, Mucking Machine or Mole, PB-4 and similar type, Power Grader, Profiler/Milling Machine (over 105 H.P.), Quad 9, Quarry Master (or equivalent), Rotating Telehandler, Scraper (Including Challenger Type), Shovel, Side Boom, Slip Form Paver (If a second man is needed, he shall be an Oiler), Tractor Drawn BeltType Loader, Truck or Trailer Mounted Log Chipper (Self Feeder), Tug Operator (Manned Rented Equipment Excluded), Tunnel Shovel

CLASSIFICATION B:
Backhoe (Tractor Mounted, Rubber Tired), Bituminous Recycler Machine, Bituminous Spreader and Mixer, Blacktop Plant (Non-Automated), Blast or Rotary Drill (Truck or Tractor Mounted), Brokk, Boring Machine, Cage Hoist, Central Mix Plant [(Non-Automated) and All Concrete Batching Plants], Concrete Paver (Over 16S), Crawler Drill (Self-contained), Crusher, Diesel Power Unit, Drill Rigs, Tractor Mounted, Front End Loader (Under 4 cu. yd.), Greaseman/Lubrication Engineer, Hi Pressure Boiler (15 lbs. and over), Hoist (One Drum), Hydro-Axe, Kolman Plant Loader and Similar Type Loaders (If Employer requires another man to clean the screen or to maintain the equipment, he shall be an Oiler), L.C.M. Work Boat Operator, Locomotive, Material handling knuckle boom, Mini Excavator (under 18,000 lbs.), Mixer (for stabilized base self-propelled), Monorail Machine, Plant Engineer, Prentice Loader, Profiler/Milling Machine (105 H.P. and under), Pug Mill, Pump Crete, Ready Mix Concrete Plant, Refrigeration Equipment (for soil stabilization), Road Widener, Roller (all above subgrade), Sea Mule, Self-contained Ride-on Rock Drill(Excluding Air-Track Type Drill), Skidder, Tractor with Dozer and/or Pusher, Trencher, Tugger Hoist, Vacum machine (mounted or towed), Vermeer saw (ride on, any size or type), Welder, Winch, Winch Cat

CLASSIFICATION C:

A Frame Winch Hoist on Truck, Articulated Heavy Hauler, Aggregate Plant, Asphalt or Concrete Grooving Machine (ride on), Ballast Regulator(Ride-on), Boiler (used in conjunction with production), Bituminous Heater (self-propelled), Boat (powered), Cement and Bin Operator, Concrete Pavement Spreader and Finisher Concrete Paver or Mixer (16' and under), Concrete Saw (self-propelled), Conveyor, Deck Hand, Directional Drill Machine Locator, Drill (Core and Well), Farm Tractor with accessories, Fine Grade Machine, Fireman, Fork Lift, Form Tamper, Grout Pump, Gunite Machine, Hammers (Hydraulic self-propelled), Hydra-Spiker (ride-on), Hydraulic Pump (jacking system), Hydro-Blaster (Water), Mulching Machine, Oiler, Parapet Concrete or Pavement Grinder, Post Hole Digger and Post Driver, Power Broom (towed), Power Heaterman, Power Sweeper, Revinius Widener, Roller (Grade and Fill), Scarifier (ride-on), Shell Winder, Skid steer loader (Bobcat or similar; including all attachments), Span-Saw (ride-on), Steam Cleaner, Tamper (ride-on), Tie Extractor (ride-on), Tie Handler (ride-on), Tie Inserter (ride-on), Tie Spacer (ride-on), Tire Repair, Track Liner (ride-on), Tractor, Tractor (with towed accessories), Vibratory Compactor, Vibro Tamp, Well Point, and the following hands-off equipment: Compressors, Dust Collectors, Generators, Pumps, Welding Machines, Light Plants and Heaters

WAGES per hour

	07/01/2025
Class A1*	$ 60.30
Class A	57.30
Class B	56.39
Class C	53.82

(*) TONNAGE RATING PREMIUMS:
Cranes over 1000 tons, A1 rate plus $7.00
Cranes from 800-999 tons, A1 rate plus $6.00
Cranes from 600-799 tons, A1 rate plus $5.00
Cranes from 400-599 tons, A1 rate plus $4.00
Cranes from 200-399 tons, A1 rate plus $3.00
Cranes from 111-199 tons, A1 rate plus $2.00
Cranes from 65-110 tons, A1 rate plus $1.50
Cranes from 0-64 Tons, A1 rate only
NOTE: Additional value subject to same premiums as shown for OT

(**) Tower Cranes, A1 rate plus $3.00 (no tonnage premiums apply)
-- Cranes in Luffer Configuration, A1 rate plus $5.00
-- Cranes with external ballast (tray or wagon), A1 rate plus $5.00
NOTE: Additional value subject to same premiums as shown for OT

Additional $2.50 per hr. for hazardous waste removal work on State and/or Federally designated waste site which require employees to wear Level C or above forms of personal protection.

SHIFT WORK
Additional $2.50 per hour for All Employees who work a single irregular work shift, of at least 5 consecutive days, starting from 5:00 PM to 1:00 AM that is mandated by the Contracting Agency.

SUPPLEMENTAL BENEFITS
Per hour

	07/01/2025
Journeyworker	$ 33.70

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
Note: If the holiday falls on Sunday, it will be observed on Monday. If the observed Monday Holiday is worked, pay shall be double time plus Holiday pay for time worked. If the Holiday falls on a Saturday and is worked pay shall be double time plus Holiday pay for time worked. If the Holiday falls on a Saturday employer can choose to observe the paid holiday Saturday or give Friday off with holiday pay.

REGISTERED APPRENTICES
Wages per hour

1000 hours terms at the following percentage of Journeyworker's wage Class B

1st	2nd	3rd	4th
60%	70%	80%	90%

Supplemental Benefits per hour worked

	07/01/2025
All Terms	$ 28.30

1-158H/H Alb

Operating Engineer - Survey Crew — 04/01/2026

JOB DESCRIPTION Operating Engineer - Survey Crew **DISTRICT** 12

ENTIRE COUNTIES
Albany, Allegany, Broome, Cayuga, Chemung, Chenango, Clinton, Columbia, Cortland, Essex, Franklin, Fulton, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Oneida, Onondaga, Ontario, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Warren, Washington, Wayne, Yates

PARTIAL COUNTIES
Dutchess: The northern portion of the county from the northern boundary line of the City of Poughkeepsie, north.
Genesee: Only the portion of the county that lies east of a line down the center of Route 98 to include all area that lies within the City of Batavia.

WAGES
These rates apply to Building, Tunnel and Heavy Highway.

Per hour:
SURVEY CLASSIFICATIONS:

Party Chief - One who directs a survey party.
Instrument Person - One who operates the surveying instruments.
Rod Person - One who holds the rods and assists the Instrument Person.

	07/01/2025
Party Chief	$ 52.91
Instrument Person	48.67
Rod Person	36.29
Additional $3.00/hr. for Tunnel Work	
Additional $2.50/hr. for Hazardous Work Site	

SUPPLEMENTAL BENEFITS
Per hour worked:

Journeyman	$ 30.10

OVERTIME PAY
See (B, E, P, *X) on OVERTIME PAGE
*Note: $25.10/Hr. Only for "ALL" premium hours paid when worked.

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
WAGES: 1000 hour terms based on the Percentage of Rod Persons Wage:

	07/01/2025
0-1000	60%
1001-2000	70%
2001-3000	80%

SUPPLEMENTAL BENEFIT per hour worked:

0-1000	$ 21.88 / PHP $18.03
1001-2000	24.90 / " 20.45
2001-3000	27.93/ " 22.93

NOTE: PHP is premium hours paid when worked.

12-158-545 D.H.H.

Operating Engineer - Survey Crew - Consulting Engineer — 04/01/2026

JOB DESCRIPTION Operating Engineer - Survey Crew - Consulting Engineer **DISTRICT** 12

ENTIRE COUNTIES
Albany, Allegany, Broome, Cayuga, Chemung, Chenango, Clinton, Columbia, Cortland, Essex, Franklin, Fulton, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Oneida, Onondaga, Ontario, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Warren, Washington, Wayne, Yates

PARTIAL COUNTIES
Dutchess: The northern portion of the county from the northern boundary line of the City of Poughkeepsie, north.

Genesee: Only the portion of the county that lies east of a line down the center of Route 98 to include all area that lies within the City of Batavia.

WAGES

These rates apply to feasibility and preliminary design surveying, line and grade surveying for inspection or supervision of construction when performed under a Consulting Engineer Agreement.

Per hour:
SURVEY CLASSIFICATIONS:

Party Chief - One who directs a survey party.
Instrument Person - One who operates the surveying instruments.
Rod Person - One who holds the rods and assists the Instrument Person.

	07/01/2025
Party Chief	$ 52.91
Instrument Person	48.67
Rod Person	36.29

Additional $3.00/hr. for Tunnel Work.
Additional $2.50/hr. for EPA or DEC certified toxic or hazardous waste work.

SUPPLEMENTAL BENEFITS

Per hour worked:

Journeyman	$ 30.10

OVERTIME PAY

See (B, E, Q, *X) on OVERTIME PAGE
*Note: $25.10/Hr. Only for "ALL" premium hours paid when worked.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

WAGES: 1000 hour terms based on percentage of Rod Persons Wage:

	07/01/2025
0-1000	60%
1001-2000	70%
2001-3000	80%

SUPPLEMENTAL BENEFIT per hour worked:

0-1000	$ 21.88 / PHP	$18.03
1001-2000	$ 24.90 / "	20.45
2001-3000	$ 27.93 / "	22.93

NOTE: PHP is premium hours paid when worked.

12-158-545 DCE

Operating Engineer - Tunnel — 04/01/2026

JOB DESCRIPTION Operating Engineer - Tunnel **DISTRICT** 7

ENTIRE COUNTIES

Albany, Allegany, Broome, Cayuga, Chemung, Chenango, Clinton, Columbia, Cortland, Essex, Franklin, Fulton, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Oneida, Onondaga, Ontario, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Warren, Washington, Wayne, Yates

PARTIAL COUNTIES

Dutchess: Northern part of Dutchess, to the northern boundary line of the City of Poughkeepie, then due east to Route 115 to Bedell Road, then east along Bedell Road to VanWagner Road, then north along VanWagner Road to Bower Road, then east along Bower Road to Rte. 44 east to Rte. 343, then along Rte. 343 east to the northern boundary of the Town of Dover Plains and east along the northern boundary of the Town of Dover Plains, to the borderline of the State of Connecticut.
Genesee: Only that portion of the county that lies east of a line drawn down the center of Route 98 and the entirety of the City of Batavia.

WAGES

CLASS A: Automatic Concrete Spreader (CMI Type); Automatic Fine Grader; Backhoe (except tractor mounted, rubber tired); Belt Placer (CMI Type); Blacktop Plant (automated); Cableway; Caisson Auger; Central Mix Concrete Plant (automated); Concrete Curb Machine (self-propelled slipform); Concrete Pump (8" or over); Dredge; Dual Drum Paver; Excavator; Front End Loader (4 cu. yd & over); Gradall; Head Tower (Sauerman or Equal); Hoist (shaft); Hoist (two or three Drum); Log Chipper/Loader (self-feeder); Maintenance Engineer (shaft and tunnel); any Mechanical Shaft Drill; Mine Hoist; Mining Machine(Mole and similar types); Mucking Machine or Mole; Overhead Crane (Gantry or Straddle Type); Pile Driver; Power Grader; Remote Controlled Mole or Tunnel Machine; Scraper; Shovel; Side Boom; Slip Form Paver (If a second man is needed, they shall be an Oiler); Tripper/Maintenance Engineer (shaft & tunnel); Tractor Drawn Belt-Type Loader; Tug Operator (manned rented equipment excluded); Tunnel Shovel.

CLASS B: Automated Central Mix Concrete Plant; Backhoe (topside); Backhoe (track mounted, rubber tired); Backhoe (topside); Bituminous Spreader and Mixer, Blacktop Plant (non-automated); Blast or Rotary Drill (truck or tractor mounted); Boring Machine; Cage Hoist; Central Mix Plant(non-automated); all Concrete Batching Plants; Compressors (4 or less exceeding 2,000 c.f.m. combined capacity); Concrete Pump; Crusher; Diesel Power Unit; Drill Rigs (tractor mounted); Front End Loader (under 4 cu. yd.); Grayco Epoxy Machine; Hoist (One Drum); Hoist (2 or 3 drum topside); Knuckle Boom material handler; Kolman Plant Loader & similar type Loaders (if employer requires another person to clean the screen or to maintain the equipment, they shall be an Oiler); L.C.M. Work Boat Operator; Locomotive; Maintenance Engineer (topside); Maintenance Grease Man; Mixer (for stabilized base-self-propelled); Monorail Machine; Plant Engineer; Personnel Hoist; Pump Crete; Ready Mix Concrete Plant; Refrigeration Equipment (for soil stabilization); Road Widener; Roller (all above sub-grade); Sea Mule; Shotcrete Machine; Shovel (topside); Tractor with Dozer and/or Pusher; Trencher; Tugger Hoist; Tunnel Locomotive; Vacuum Machine (mounted or towed); Welder; Winch; Winch Cat.

CLASS C: A Frame Truck; All Terrain Telescoping Material Handler; Ballast Regulator (ride-on); Compressors (4 not to exceed 2,000 c.f.m. combined capacity; or 3 or less with more than 1200 c.f.m. but not to exceed 2,000 c.f.m.); Compressors ((any size, but subject to other provisions for compressors), Dust Collectors, Generators, Pumps, Welding Machines, Light Plants (4 or any type combination)); Concrete Pavement Spreaders and Finishers; Conveyor; Drill (core); Drill (well); Electric Pump used in conjunction with Well Point System; Farm Tractor with Accessories; Fine Grade Machine; Fork Lift; Grout Pump (over 5 cu. ft.); Gunite Machine; Hammers (hydraulic-self-propelled); Hydra-Spiker (ride-on); Hydra-Blaster (water); Hydro-Blaster; Motorized Form Carrier; Post Hole Digger and Post Driver; Power Sweeper; Roller grade & fill); Scarifer (ride-on); Span-Saw (ride-on); Submersible Electric Pump (when used in lieu of well points); Tamper (ride-on); Tie-Extractor (ride-on), Tie Handler (ride-on), Tie Inserter (ride-on), Tie Spacer (ride-on); Track Liner (ride-on); Tractor with towed accessories; Vibratory Compactor; Vibro Tamp, Well Point.

CLASS D: Aggregate Plant; Cement & Bin Operator; Compressors (3 or less not to exceed 1,200 c.f.m. combined capacity); Compressors ((any size, but subject to other provisions for compressors), Dust Collectors, Generators, Pumps, Welding Machines, Light Plants (3 or less or any type or combination)); Concrete Saw (self-propelled); Form Tamper; Greaseman; Hydraulic Pump (jacking system); Junior Engineer; Light Plants; Mulching Machine; Oiler; Parapet Concrete or Pavement Grinder; Power Broom (towed); Power Heaterman (when used for production); Revinius Widener; Shell Winder; Steam Cleaner; Tractor.

Per hour:	07/01/2025
CLASS A	$ 58.44
CLASS B	57.22
CLASS C	54.43
CLASS D	51.42

Additional $5.00 per hour for Hazardous Waste Work on a state or federally designated hazardous waste site where the Operating Engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin and eye protection.

CRANES:
Crane 1: All cranes, including self-erecting.
Crane 2: All Lattice Boom Cranes and all cranes with a manufacturer's rating of fifty (50) ton and over.
Crane 3: All hydraulic cranes and derricks with a manufacturer's rating of forty nine (49) ton and below, including boom trucks.

Crane 1	$ 62.44
Crane 2	61.44
Crane 3	60.44

SUPPLEMENTAL BENEFITS

Per hour:

$ 25.90
+ 10.10*

* This portion of the benefits subject to SAME PREMIUM as shown for overtime wages.

OVERTIME PAY

See (B, B2, E, Q, X) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: If a holiday falls on Sunday, it shall be observed on Monday.

REGISTERED APPRENTICES
WAGES:(1000) hours terms at the following percentage of Journeyworker's Class B wage.

1st term	60%
2nd term	65%
3rd term	70%
4th term	75%

SUPPLEMENTAL BENEFITS per hour: Same as Journeyworker

7-158-832TL.

Painter 04/01/2026

JOB DESCRIPTION Painter **DISTRICT** 2

ENTIRE COUNTIES
Broome, Chenango, Tioga

WAGES
Per hour:

	07/01/2025	05/01/2026 Additional
Painter	$ 28.20	$ 1.85*
Taper, Paperhangers, and Vinyl hangers	29.61	1.90*

*To be allocated at a later date.

ADDITIONAL AMOUNTS FOR SPECIFIC TYPES OF JOBSITE CONDITIONS (amount subject to any overtime premiums):
- Additional $ 1.10 per hour for Brush and Roll Epoxy (Solvent Base Only)
- Additional $ 0.60 per hour for Swing Scaffold, Boatswain chair, Spray helper, Steam cleaning acid and high pressure water, Power grinders with respirator
- Additional $ 0.60 per hour for Structural steel (buildings) defined as new or old construction where ceilings, walls or the steel itself is to be painted from open trusses which require climbing or crawling without the support of solid scaffolding or scaffolding starting at the floor or ground level.
- Additional $ 1.00 per hour for Spray Painting
- Additional $ 1.00 per hour for Steeple Jack (Over 100 feet)
- Additional $ 1.50 per hour for Spray Epoxy (Solvent Based)
- Additional $ 0.90 per hour for Sandblasting

NOTE - SEE BRIDGE PAINTER RATES FOR BRIDGES & TANKS

SUPPLEMENTAL BENEFITS
Per hour:
Journeyworker $ 24.98

OVERTIME PAY
See (B, E2, F, R) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
A Holiday that falls on a Sunday will be celebrated on Monday, a holiday that falls on a Saturday will be celebrated on Friday.

REGISTERED APPRENTICES
WAGES:

Painter: 750 hour terms at the Painter Apprentice wage rate:

1st	2nd	3rd	4th	5th	6th	7th	8th
$ 18.00	$ 19.00	$ 20.00	$ 21.00	$ 22.00	$ 23.00	$ 24.00	$ 25.00

Taper: 750 hour terms at the following Journeyworker Taper Apprentice wage rate:

1st	2nd	3rd	4th	5th	6th
$ 20.00	$ 21.00	$ 22.00	$ 23.00	$ 24.00	$ 25.00

ADDITIONAL AMOUNTS FOR SPECIFIC TYPES OF JOBSITE CONDITIONS (amount subject to any overtime premiums):
- Additional $ 1.10 per hour for Brush and Roll Epoxy (Solvent Base Only)
- Additional $ 0.60 per hour for Swing Scaffold, Boatswain chair, Spray helper, Steam cleaning acid and high pressure water, Power grinders with respirator

- Additional $ 0.60 per hour for Structural steel (buildings) defined as new or old construction where ceilings, walls or the steel itself is to be painted from open trusses which require climbing or crawling without the support of solid scaffolding or scaffolding starting at the floor or ground level.
- Additional $ 1.00 per hour for Spray Painting
- Additional $ 1.00 per hour for Steeple Jack (Over 100 feet)
- Additional $ 1.50 per hour for Spray Epoxy (Solvent Based)
- Additional $ 0.90 per hour for Sandblasting

SUPPLEMENTAL BENEFITS per hour:
Painter/Decorator:

1st	2nd	3rd	4th	5th	6th	7th	8th
$ 6.00	$ 7.00	$ 8.00	$ 9.10	$ 11.00	$ 11.00	$ 13.00	$ 14.00

Taper/Drywall Finisher:

1st	2nd	3rd	4th	5th	6th
$ 6.00	$ 7.00	$ 8.00	$ 10.00	$ 13.00	$ 14.00

2-178 B

Painter — 04/01/2026

JOB DESCRIPTION Painter **DISTRICT** 3

ENTIRE COUNTIES
Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Cortland, Delaware, Erie, Genesee, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Niagara, Oneida, Onondaga, Ontario, Orleans, Oswego, Otsego, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Wayne, Wyoming, Yates

WAGES

Per hour:	07/01/2025	05/01/2026 Additional
Bridge	$ 46.19	$ 2.50
Tunnel	46.19	
Tank*	44.19	

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.

*Tank rate applies to indoor and outdoor tanks, tank towers, standpipes, digesters, waste water treatment tanks, chlorinator tanks, etc. Covers all types of tanks including but not limited to steel tanks, concrete tanks, fiberglass tanks, etc.

SHIFT WORK
Note an additional $1.50 per hour is required when the contracting agency or project specification requires any shift to start prior to 6:00am or after 12:00 noon.

SUPPLEMENTAL BENEFITS
Per hour:
$ 31.51

OVERTIME PAY
Exterior work only See (B, E2, E4, F, R) on OVERTIME PAGE.
All other work See (B, F, R) on OVERTIME PAGE.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:

750 hour terms at the following wage:

1st	2nd	3rd	4th	5th	6th
$ 24.00	$ 26.00	$ 28.00	$ 30.00	$ 34.00	$ 38.00

Supplemental benefits per hour:

1st	2nd	3rd	4th	5th	6th
$ 6.60	$ 6.95	$ 7.30	$ 7.65	$ 8.00	$ 8.35

3-4-Bridge, Tunnel, Tank

Painter - Metal Polisher — 04/01/2026

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

	07/01/2025
Metal Polisher	$ 40.33
Metal Polisher*	41.43
Metal Polisher**	44.33

*Note: Applies on New Construction & complete renovation
** Note: Applies when working on scaffolds over 34 feet.

SUPPLEMENTAL BENEFITS
Per Hour: 07/01/2025

Journeyworker:
All classification $ 13.44

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, 11, 15, 16, 25, 26) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:
One (1) year term at the following wage rates:

	07/01/2025
1st year	$ 20.17
2nd year	22.18
3rd year	24.20
1st year*	$ 20.56
2nd year*	22.62
3rd year*	24.74
1st year**	$ 22.67
2nd year**	24.68
3rd year**	26.70

*Note: Applies on New Construction & complete renovation
** Note: Applies when working on scaffolds over 34 feet.

Supplemental benefits:
Per hour:

1st year	$ 8.94
2nd year	8.94
3rd year	8.94

8-8A/28A-MP

Plumber — 04/01/2026

JOB DESCRIPTION Plumber **DISTRICT** 2

ENTIRE COUNTIES
Broome, Chenango

PARTIAL COUNTIES
Cortland: Only the Township of Marathon.
Delaware: Only the Townships of Andes, Bovina, Colchester, Davenport, Delhi, Deposit, Franklin, Hamden, Hancock, Harpersfield, Kortright, Masonville, Meredith, Sidney, Stamford, Tompkins and Walton.
Madison: Only the Township of Georgetown.
Otsego: Only the Townships of Burlington, Butternuts, Decatur, Edmeston, Hartwick, Laurens, Maryland, Milford, Morris, New Lisbon, Oneonta, Otego, Pittsfield, Unadilla, Westford and Worchester.
Tioga: Only the Townships of Newark Valley and Owego.

WAGES

Per hour:	07/01/2025	05/01/2026 Additional
Plumber	$ 44.91	$ 3.45*
Steamfitter	44.91	3.45*

*To be allocated at a later date

SHIFT WORK
Agency-mandated shift operations:

1. Shift work shall start no earlier than 6AM Monday and will conclude no later than 9AM Saturday (overtime premiums applicable after 8 hours in a shift).

2. Single irregular shiftwork, less than 3 consecutive days will be paid at the rate of time and one-half of the regular hourly rate.

3. 3 consecutive work days or more:
First Shift - No Premium (Starting 6AM-9AM)
Second Shift - Regular hourly rate plus 12%
Third Shift - Regular hourly rate plus 18%

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 15.15
	+18.21*

*This portion of the benefit is subject to the SAME PREMIUM as shown for overtime on projects over $100 million in total construction costs (including engineering & architecture).

OVERTIME PAY
See (B, E, Q, *V) on OVERTIME PAGE
*portion of supplemental benefits subject to V code when project cost is over $100 million (including engineering & architecture).

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
When a Holiday falls on Sunday, it will be celebrated the following day. If the holiday falls on a Saturday, it will be observed that day unless so determined by the Federal Government to be celebrated on a different day.

REGISTERED APPRENTICES
WAGES: One year terms at the following percentage of Journeyworker's wage.

1st.	2nd.	3rd.	4th.	5th.
50%	55%	60%	70%	85%

SUPPLEMENTAL BENEFITS per hour:

1st term	$ 15.15
	+8.92*
All other terms	$ 15.15
	+14.21*

*This portion of the benefit is subject to the SAME PREMIUM as shown for overtime on projects over $100 million in total construction costs (including engineering & architecture).

2-112s-SF

Roofer — 04/01/2026

JOB DESCRIPTION Roofer **DISTRICT** 2

ENTIRE COUNTIES
Broome, Chemung, Chenango, Delaware, Otsego, Schoharie, Schuyler, Steuben, Tioga, Tompkins

WAGES

Per hour:	07/01/2025
Roofer, Waterproofer	$ 30.33
	+ 1.02*

*This amount is paid for all hours worked, whether regular or premium hours.

NOTE ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount not subject to overtime premiums):
- On days where more than one shift is worked on the job, the hours worked after 4:30 PM and before 6:30 AM will be paid an additional $1.90 per hour premium. This premium is not for use in emergency repair situations.
- Premium of $1.25 per hour will be paid for the application, rip-off or handling of pitch products. The premium will be paid for pitch that is showing, covered or buried on the roof.
- Premium of $1.25 per hour will be paid for asbestos abatement requiring a half face respirator.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 23.99

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages:

Hours per term	
0-667 Hrs.	$ 21.24 + 0.71*
668-1335 Hrs.	22.76 + 0.76*
1336-2002 Hrs.	24.27 + 0.81*
2003-2669 Hrs.	25.79 + 0.86*
2670-3336 Hrs.	27.30 + 0.92*
3337-4000 Hrs.	28.82 + 0.97*

*This amount is paid for all hours worked, whether regular or premium hours.

NOTE ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount not subject to overtime premiums):
- On days where more than one shift is worked on the job, the hours worked after 4:30 PM and before 6:30 AM will be paid an additional $1.90 per hour premium. This premium is not for use in emergency repair situations.
- Premium of $1.25 per hour will be paid for the application, rip-off or handling of pitch products. The premium will be paid for pitch that is showing, covered or buried on the roof.
- Premium of $1.25 per hour will be paid for asbestos abatement requiring a half face respirator.

Supplemental Benefits:	
0-667 Hrs.	$ 19.93
668-1335 Hrs.	20.62
1336-2002 Hrs.	21.29
2003-2669 Hrs.	21.96
2670-3336 Hrs.	22.65
3337-4000 Hrs.	23.32

2-203elmi

Sheetmetal Worker — 04/01/2026

JOB DESCRIPTION Sheetmetal Worker **DISTRICT** 2

ENTIRE COUNTIES
Allegany, Broome, Chemung, Delaware, Otsego, Schuyler, Steuben, Tioga, Tompkins

WAGES
Per hour:

	07/01/2025	05/01/2026 Additional	05/01/2027 Additional
Sheetmetal Worker	$ 39.74 + 0.99*	$ 4.00**	$ 4.00**

NOTE: Ten cents ($0.10) per hour additional premium to be paid when working polyresin fiberglass.
*Amount is paid for every hour worked (amount not subject to overtime premium)
**To be allocated at a later date

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker:	$ 22.41

OVERTIME PAY
See (*B1, Q) on OVERTIME PAGE

*On Saturday, time and one half of the hourly rate for the first ten (10) hours, then two (2) times the hourly wage rate for all hours after ten (10) hours worked.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
Note: Holidays are observed on the Holiday, not on the day that it is locally observed.

REGISTERED APPRENTICES
WAGES per hour:
Indentured after 05/01/2025 (1-year Terms):

1st	2nd	3rd	4th	5th
$ 23.84	$ 25.83	$ 27.82	$ 31.79	$ 33.78
+0.60*	+0.65*	+0.70*	+0.79*	+0.84*

Indentured prior to 05/01/2025 (Half Year Terms):

1st	2nd	3rd	4th	5th	6th	7th	8th
$ 23.84	$ 23.84	$ 25.83	$ 27.82	$ 29.81	$ 31.79	$ 33.78	$ 35.77
+0.60*	+0.60*	+0.65*	+0.70*	+0.75*	+0.79*	+0.84*	+0.89*

*Amount is paid for every hour worked (amount not subject to overtime premium)

SUPPLEMENTAL BENEFITS per hour:
Indentured after 05/01/2025:

1st	2nd	3rd	4th	5th
$ 2.12	$ 18.64	$ 18.72	$ 18.88	$ 22.17

Indentured prior to 05/01/2025:

1st	2nd	3rd	4th	5th	6th	7th	8th
$ 2.12	$ 2.12	$ 18.64	$ 18.72	$ 18.80	$ 18.88	$ 18.97	$ 19.05

2-112

Sprinkler Fitter — 04/01/2026

JOB DESCRIPTION Sprinkler Fitter **DISTRICT** 1

ENTIRE COUNTIES
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, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Washington, Wayne, Wyoming, Yates

WAGES
Per hour 07/01/2025

Sprinkler Fitter $ 45.06

SUPPLEMENTAL BENEFITS
Per hour

Journeyworker $ 29.41

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
$ 23.28	$ 25.98	$ 28.15	$ 30.31	$ 31.94	$ 34.64	$ 36.81	$ 38.97	$ 41.14	$ 43.30

Supplemental Benefits per hour

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
$ 9.57	$ 9.57	$ 21.49	$ 21.49	$ 21.74	$ 21.74	$ 21.74	$ 21.74	$ 21.74	$ 21.74

1-669

Teamster - Building 04/01/2026

JOB DESCRIPTION Teamster - Building **DISTRICT** 6

ENTIRE COUNTIES
Broome, Cayuga, Cortland, Delaware, Onondaga, Seneca, Tompkins, Yates

PARTIAL COUNTIES
Allegany: Only the Townships of Alfred, Almond, Burns.
Chenango: Only the Townships of Afton, Bainbridge, Coventry, Greene, Guilford, Oxford and Smithville.
Madison: Only the Townships of Cazenovia, DeRuyter, Fenner, Georgetown, Lenox, Nelson and Sullivan.
Oswego: All Townships except Boylston, Redfield and Sandy Creek.
Otsego: Only the Townships of Butternuts, Laurens, Maryland, Millford, Morris, Oneonta, Otego, Unadilla, and Worchester.
Steuben: Only the Townships of Canisteo, Cohoctan, Dansville, Fremont, Greenwood, Hornell, Hartsville, Jasper, Prattsburg, Troupsburg, and West Union.
Tioga: Only the Townships of Berkshire, Candor, Newark Valley, Nichols, Owego, Richford, and Tioga. All territory east of Nichols/Smithboro to Broome County, within the State of New York.

WAGES
GROUP A: Straight Trucks.
GROUP B: Tractor Trailer, Farm Tractor, Fuel Truck.
GROUP C: Euclid.
GROUP D: On site Mechanic.

Per hour:	07/01/2025
Building: (under $ 5 million*)	
GROUP A, B, C, D	$ 34.43
Building: (over $ 5 million*)	
GROUP A, B	$ 35.48
GROUP C	35.83
GROUP D	35.63

* Total project cost including General Construction, Plumbing, HVAC and Electrical

SUPPLEMENTAL BENEFITS
Per hour:

(under $5 million*)	$ 30.87
(over $5 million*)	31.67

* Total project cost including General Construction, Plumbing, HVAC and Electrical

OVERTIME PAY
(D, O) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

6-317

Teamster - Heavy&Highway 04/01/2026

JOB DESCRIPTION Teamster - Heavy&Highway **DISTRICT** 2

ENTIRE COUNTIES
Broome, Delaware

PARTIAL COUNTIES
Chenango: Only the Townships of Smithville, Greene, Coventry, Oxford, Afton, Bainbridge and Guilford.
Otsego: Only the Townships of Butternuts, Laurens, Maryland, Milford, Morris, Oneonta, Otego, Unadilla and Worchester.
Tioga: Only the Townships of Nichols, Tioga, Candor, Richford, Berkshire, Newark Valley and Owego.

WAGES
Per hour:

GROUP #1: Warehousemen, Yardmen, Truck Helpers, Pickups, Panel Trucks, Flatboy Material Trucks (straight jobs), Single Axle Dump Trucks, Dumpsters, Material Checkers and Receivers, Greasers, Truck Tiremen, Mechanic Helpers and Parts Chasers, Tandems and Batch Trucks, Mechanics, Dispatcher. Semi-Trailers, Low-boy Trucks, Asphalt Distributor Trucks, Agitator, Mixer Trucks and Dumpcrete type vehicles, Truck Mechanic.

GROUP #2: Specialized Earth Moving Equipment-Euclid type or similar off-highway where not self-loading. Straddle (Ross) Carrier, and self-contained concrete mobile truck. Off-highway Tandem Back-Dump, Twin Engine Equipment and Double-Hitched Equipment where not self-loading.

GROUP #3: Fuel Truck that requires a HazMat license endorsement.

	07/01/2025	07/01/2026	07/01/2027
Group #1	$ 36.63	$ 39.98	$ 43.64
Group #2	36.72	40.07	43.73
Group #3	41.63	44.98	48.64

NOTES
- An additional $1.50 per hour shall be paid to an employee who performs hazardous waste removal work on a City, County, State and/or Federally designated waste site where employee is required to use or wear personal protective equipment.

SHIFT WORK
- A single irregular work shift can start any time between 5:00pm and 1:00am. All employees who work a single irregular shift on governmental mandated night work shall be paid an additional $5.00 per hour (applicable on projects bid on or after 07/01/2020).

SUPPLEMENTAL BENEFITS
Per hour paid:

$ 28.20	$ 28.85	$ 29.69

OVERTIME PAY
See (B, E, Q, X) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
If a holiday falls on Sunday, it will be celebrated Monday.
Any employee laid off within the week in which a holiday falls shall receive holiday pay.

2-317(Bing)

Welder — 04/01/2026

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 07/01/2025

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
(B3)	Time and one half of the hourly rate after 40 straight 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)	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 12226

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
- ☐ 1O 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
- ☐ Fuel Delivery
- ☐ Guards, Watchmen
- ☐ Janitors, Porters, Cleaners, Elevator Operators
- ☐ Moving furniture and equipment
- ☐ Trash and refuse removal
- ☐ Window cleaners
- ☐ Other (Describe)

9. Does this project comply with the Wicks Law involving separate bidding? YES ☐ NO ☐

10. Name and Title of Requester

Signature

SEE PAGE TWO FOR LAWS RELATING TO PUBLIC WORK CONTRACTS

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://apps.labor.ny.gov/EDList/searchPage.do

For inquiries please call 518-457-5589.

NYSDOL Bureau of Public Work Debarment List 04/17/2026

Article 8

AGENCY	Fiscal Officer	FEIN	EMPLOYER NAME	EMPLOYER DBA NAME	ADDRESS	DEBARMENT START DATE	DEBARMENT END DATE
DOL	DOL	*****5754	0369 CONTRACTORS, LLC		515 WEST AVE UNIT PH 13NORWALK CT 06850	05/12/2021	05/12/2026
DOL	DOL	*****5784	A.J.M. TRUCKING, INC.		PO BOX 2064 MONROE NY 10950	02/12/2024	02/12/2029
DOL	DOL		AKHLAQ OULAKH		4307 28TH AVE ASTORIA NY 11103	10/11/2024	10/11/2029
DOL	DOL		ALEXANDER DELISA		411 THEODORE FREMND SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	NYC		ALL COUNTY SEWER & DRAIN, INC.		7 GREENFIELD DR WARWICK NY 10990	03/25/2022	03/25/2027
DOL	DOL	*****8387	AMERICAN PAVING & MASONRY, CORP.		8 FOREST AVE GLEN COVE NY 11542	05/24/2024	05/24/2029
DOL	DOL	*****8654	AMERICAN PAVING, INC.		8 FORREST AVE. GLEN COVE NY 11542	05/24/2024	05/24/2029
DOL	DOL		ANGELO GARCIA		515 WEST AVE UNIT PH 13NORWALK CT 06850	05/12/2021	05/12/2026
DOL	DOL		ANGELO STANCO		8 FOREST AVE. GLEN COVE NY 11542	05/24/2024	05/24/2029
DOL	DOL		ANGELO TONDO		449 WEST MOMBSHA ROAD MONROE NY 10950	06/06/2022	06/06/2027
DOL	DOL	*****4231	ANKER'S ELECTRIC SERVICE, INC.		10 SOUTH 5TH ST LOCUST VALLEY NY 11560	09/26/2022	09/26/2027
DOL	DOL		ANTHONY CASALE		20 HEATHER RIDGE ROAD TROY NY 12180	05/20/2025	05/20/2030
DOL	DOL		ANTHONY MONGELLI		PO BOX 2064 MONROE NY 10950	02/12/2024	02/12/2029
DOL	DOL	*****8421	B & B DRYWALL, INC		206 WARREN AVE APT 1WHITE PLAINS NY 10603	12/14/2021	12/14/2026
DOL	DOL	*****3932	B ROC CONSTRUCTION INC		7307 WOODSIDE ROAD VICTOR NY 14564	05/06/2025	05/06/2030
DOL	DA	*****2404	BJA RENOVATION, CORP		33 DOLLARD DR NORTH BABYLON NY 11703	03/19/2025	03/19/2030
DOL	DOL	*****5078	BLACK RIVER TREE REMOVAL, LLC		29807 ANDREWS ROAD BLACK RIVER NY 13032	10/17/2023	10/17/2028
DOL	DOL		C.M.C CONTRACTORS, INC.		500 WEST PUTNAM AVE SUITE 400GREENWICH CT 06830	09/03/2025	09/03/2030
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
DOL	DOL		CARLOS F. ESCOBAR		411 THEODORE FREMD AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL		CARLOS FIGUEROA		411 THEODORE FREMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL	*****4155	CASA BUILDERS, INC.	FRIEDLANDER CONSTRUCTION	64 N PUTT CONNERS ROAD NEW PALTZ NY 12561	05/10/2023	05/10/2028
DOL	AG	*****7247	CENTURY CONCRETE CORP		2375 RAYNOR ST RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL		CESAREO TULA		120 SEARS AVE ELMSFORD NY 10523	09/26/2025	09/26/2030
DOL	DOL	*****2292	CHAMPION MAINTENANCE CONTRACTORS, INC.		211 SOUTH RIDGE STREET RYE BROOK NY 10573	09/03/2025	09/03/2030
DOL	NYC	*****2117	CHARAN ELECTRICAL ENTERPRISES		9-11 40TH AVENUE LONG ISLAND CITY NY 11101	09/26/2023	09/26/2028
DOL	DOL		CHARLES CASALE		55 MAIN AVENUE WYNANTSKILL NY 12198	05/20/2025	05/20/2030
DOL	DOL		CHARLES CASALE		55 MAIN AVENUE WYNANTSKILL NY 12198	05/20/2025	05/20/2030
DOL	DOL		CHRISTOPHER PEROSI		5507 NESCONSET HIGHWAY MT. SINAI NY 11766	07/17/2025	07/17/2030
DOL	DOL	*****2281	CORRAO TRUCKING, INC.		PO BOX 393 NANUET NY 10954	09/17/2024	09/17/2029
DOL	DOL		CRAIG JOHANSEN		10 SOUTH 5TH ST LOCUST VALLEY NY 11560	09/26/2022	09/26/2027
DOL	DOL	*****7619	DANCO CONSTRUCTION UNLIMITED INC.		485 RAFT AVENUE HOLBROOK NY 11741	10/19/2021	10/19/2026
DOL	DOL		DANIEL DELISA		211 SOUTH RIDGE STREET RYE BROOK NY 10573	09/03/2025	09/03/2030

DOL	DOL		DANIEL ROBERT MCNALLY		7 GREENFIELD DRIVE WARWICK NY 10990	03/25/2022	03/25/2027
DOL	DOL		DARWIN PEGUESE		6400 BALTIMORE NATIONAL SUITE 602CANTONSVILLE NY 21228	10/24/2024	10/24/2029
DOL	DOL		DAVID FRIEDLANDER		64 NORTH PUTT CORNERS RD NEW PALTZ NY 12561	05/10/2023	05/10/2028
DOL	DOL		DENISE NAGLE		36 OAKWOOD TRAIL S AL MONROE NY 10950	10/29/2025	10/29/2030
DOL	DOL		DINA TAYLOR		64 N PUTT CONNERS RD NEW PALTZ NY 12561	05/10/2023	05/10/2028
DOL	AG		EDWIN HUTZLER		23 NORTH HOWELLS RD BELLPORT NY 11713	08/04/2021	08/04/2026
DOL	DA		EDWIN HUTZLER		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	*****2337	EGL DRAINAGE SOLUTION & REPAIRS LLC		5507 NESCONSET HIGHWAY MT. SINAI NY 11766	07/17/2025	07/17/2030
DOL	DOL	*****0780	EMES HEATING & PLUMBING CONTR		5 EMES LANE MONSEY NY 10952	01/20/2002	01/20/3002
DOL	DOL		EMIL KISZKO		84 DIAMOND ST BROOKLYN NY 11222	07/18/2024	07/18/2029
DOL	DOL	*****3298	EMJACK CONSTRUCTION CORP.		84 DIAMOND ST BROOKLYN NY 11222	07/18/2024	07/18/2029
DOL	DOL	*****3298	EMJACK CONSTRUCTION LLC		4192 SIR ANDREW CIRCLE DOYLESTOWN PA 18902	07/18/2024	07/18/2029
DOL	NYC		ENRICO MANETTA		101 MALBA DR. WHITESTONE NY 11357	04/01/2026	04/01/2031
DOL	DOL		EUGENIUSZ "GINO" KUCHAR		195 KINGSLAND AVE BROOKLYN NY 11222	12/22/2023	12/22/2028
DOL	DA		FREDERICK HUTZLER		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	*****2998	G.E.M. AMERICAN CONSTRUCTION CORP.		195 KINGSLAND AVE BROOKLYN NY 11222	12/22/2023	12/22/2028
DOL	DA		GEORGE LUCEY		150 KINGS STREET BROOKLYN NY 11231	01/19/1998	01/19/2998
DOL	DA		GIOVANNA TRAVALJA		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	DA		GIOVANNI NAPOLITANO		2501 BAYVIEW AVENUE WANTAGH NY 11793	02/21/2024	02/21/2029
DOL	DA	*****0213	GORILLA CONTRACTING GROUP, LLC		505 MANHATTAN AVE WEST BABYLON NY 11704	10/05/2023	10/05/2028
DOL	DA	*****4760	GTX CONSTRUCTION ASSOCIATES, CORP		2501 BAYVIEW AVE WANTAGH NY 11793	02/21/2024	02/21/2029
DOL	DOL		HENRY WICKE A/K/A HENRY WICKE, JR.		36 OAKWOOD TRAIL S AL MONROE NY 10950	10/29/2025	10/29/2030
DOL	DOL		HERBERT CLEMEN		42 FOWLER AVENUE CORTLAND MANOR NY 10567	01/24/2023	01/24/2028
DOL	DOL		HERBERT CLEMEN		42 FOWLER AVENUE CORTLAND MANOR NY 10567	10/25/2022	10/25/2027
DOL	DOL	*****6961	HUNTER ELEVATOR COMPANY, INC.		36 OAKWOOD TRAIL S AL MONROE NY 10950	10/29/2025	10/29/2030
DOL	DOL	*****2397	ISLAND BREEZE MARINE, INC.		6400 BALTIMORE NATIONAL CANTONSVILLE MD 21228	10/24/2024	10/24/2029
DOL	DOL	*****5010	J. LINDSLEY ENTERPRISE, LLC		1002 STATE ROUTE 176 FULTON NY 13069	07/30/2025	07/30/2030
DOL	DOL	*****0241	J. LINDSLEY ROOFING, LLC		211 NORTH 2ND STREET FULTON NY 13069	07/30/2025	07/30/2030
DOL	DOL		J.M.J CONSTRUCTION		151 OSTRANDER AVENUE SYRACUSE NY 13205	11/21/2022	11/21/2027
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	12/12/2022	12/12/2027
DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028

DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		JAMES J. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL		JAMES LINDSLEY		211 NORTH 2ND STREET FULTON NY 13069	07/30/2025	07/30/2030
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL	*****7993	JBS DIRT, INC.		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL	*****2435	JEFFEL D. JOHNSON	JMJ7 AND SON	5553 CAIRNSTRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JEFFEL JOHNSON ELITE CARPENTER REMODEL AND CONSTRUCTION		C2 EVERGREEN CIRCLE LIVERPOOL NY 13090	11/21/2022	11/21/2027
DOL	DOL	*****2435	JEFFREY M. JOHNSON	JMJ7 AND SON	5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JENNIFER LINDSLEY		211 NORTH 2ND STREET FULTON NY 13069	07/30/2025	07/30/2030
DOL	DOL		JERRY DASTON		36 OAKWOOD TRAIL S AL MONROE NY 10950	10/29/2025	10/29/2030
DOL	DOL		JIM PLAUGHER		17613 SANTE FE LINE ROAD WAYNEFIELD OH 45896	07/16/2021	07/16/2026
DOL	DOL		JMJ7 & SON CONSTRUCTION, LLC		5553 CAIRNS TRAIL LIVERPOOL NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 AND SONS CONTRACTORS		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS		7014 13TH AVENUE BROOKLYN NY 11228	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS AND SONS		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS, LLC		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JOHN NAGLE A/K/A JOHN NAGLE, JR.		36 OAKWOOD TRAIL S AL MONROE NY 10950	10/29/2025	10/29/2030
DOL	DOL		JONATHAN DELISA		411 THEODORE FREMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL		JORGE FIGUEROA		411 THEODORE FRMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL		JORGE RAMOS		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	DA		JOSEPH DEMASCO		33 DOLLARD DRIVE NORTH BABYLON NY 11703	01/30/2026	01/30/2031
DOL	DA		JOSEPH DEMASCO		33 DOLLARD DRIVE NORTH BABYLON NY 11703	03/19/2025	03/19/2030
DOL	DOL		JOSEPH HALL		937 US ROUTE 11 CENTRAL SQUARE NY 13036	10/21/2024	10/21/2029
DOL	DOL	*****2271	JOSEPH HALL COMPANIES LLC		937 US ROUTE 11 CENTRAL SQUARE NY 13036	10/21/2024	10/21/2029
DOL	DOL		JOSEPH K. SALERNO		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DOL		JOSEPH K. SALERNO II		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027

DOL	DOL		JRN CONSTRUCTION CO, LLC		1024 BROADWAY ALBANY NY 12204	11/07/2023	11/07/2028
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		JULIUS AND GITA BEHREND		5 EMES LANE MONSEY NY 10952	11/20/2002	11/20/3002
DOL	DOL		KEAN INDUSTRIES, LLC		2345 RT. 52 SUITE 2NHOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	DOL		KEVIN FUNEZ URBINA A/K/A KEVIN FUNEZ		1009 LYNDALE AVE TRENTON NJ 08629	12/16/2024	12/16/2029
DOL	DOL		KIMBERLY F. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL	*****8760	KJ&J CONSTRUCTION, LLC		1009 LYNDALE AVE TRENTON NJ 08629	12/16/2024	12/16/2029
DOL	DOL		KMA GROUP II, INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL	*****1833	KMA GROUP INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL		KMA INSULATION, INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL		KRIN HEINEMANN		2345 ROUTE 52, SUITE 2N HOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	NYC		KULWANT S. DEOL		9-11 40TH AVENUE LONG ISLAND CITY NY 11101	09/26/2023	09/26/2028
DOL	DA	*****8816	LAKE CONSTRUCTION AND DEVELOPMENT CORPORATION		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL	*****3716	LIGHTNIN ELECTRIC INC.		3418 NORTHERN BLVD SUITE 5-27LONG ISLAND CITY NY 11101	12/13/2024	12/13/2029
DOL	AG	*****3291	LINTECH ELECTRIC, INC.		3006 TILDEN AVE BROOKLYN NY 11226	02/16/2022	02/16/2027
DOL	DOL		LIZETTE PONCE		411 THEODORE FREMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL		LOUIS A. CALICCHIA		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	NYC	*****7516	MANCO ENTERPRISES OF NY, INC.		44-17 54TH DR. MASPETH NY 11378	04/01/2026	04/01/2031
DOL	NYC	*****1783	MANETTA ENTERPISES, INC. D/B/A MANETTA INDUSTRIES		44-17 54TH DR. MASPETH NY 11378	04/01/2026	04/01/2031
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	DOL	*****1320	MJC MASON CONTRACTING, INC.		42 FOWLER AVENUE CORTLAND MANOR NY 10567	10/25/2022	10/25/2027
DOL	DOL	*****1320	MJC MASON CONTRACTING, INC.		42 FOWLER AVENUE CORTLAND MANOR NY 10567	01/24/2023	01/24/2028
DOL	DOL		MOHAMMAD MIAN		8269 21ST ST BELLEROSE NY 11426	12/22/2022	12/22/2027
DOL	NYC		NASEER CHAUDHRY		2349 BRAGG STREET BROOKLYN NY 11229	04/22/2025	04/22/2030
DOL	DOL	*****7790	NATIONAL BUILDING & RESTORATION CORP		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DOL	*****1797	NATIONAL CONSTRUCTION SERVICES, INC		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028

DOL	NYC		NAVIT SINGH		402 JERICHO TURNPIKE NEW HYDE PARK NY 11040	08/10/2022	08/10/2027
DOL	DOL		NELCO CONTRACTING, LLC		1024 BROADWAY ALBANY NY 12204	11/07/2023	11/07/2028
DOL	DA		NICHOLAS BARNETT		33 DOLLARD DR BABYLON NY 11703	03/04/2025	03/04/2030
DOL	DOL		NICHOLAS RAO		411 THEODORE FREMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DA		NICHOLAS T. ANALITIS		505 MANHATTAN AVE WEST BABYLON NY 11704	10/05/2023	10/05/2028
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL		NIKOLA NTONI		3418 NORTHERN BLVD SUITE 5-27LONG ISLAND CITY NY 11101	12/13/2024	12/13/2029
DOL	NYC	*****6971	NN CONSTRUCTION, INC.		2349 BRAGG STREET BROOKLYN NY 11229	04/22/2025	04/22/2030
DOL	NYC	*****5643	NYC LINE CONTRACTORS, INC.		402 JERICHO TURNPIKE NEW HYDE PARK NY 11040	08/10/2022	08/10/2027
DOL	DOL		PATRICK PENNACCHIO		2345 RT. 52 SUITE 2NHOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	DOL		PATRICK PENNACCHIO		2345 RT. 52 SUITE 2NHOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	DOL	*****4168	PHANTOM CONSTRUCTION CORP.		95-27 116TH STREET QUEENS NY 11419	07/12/2024	07/12/2029
DOL	DOL	*****4168	PHANTOM CONSTRUCTION CORP.		95-27 116TH STREET QUEENS NY 11419	05/28/2024	05/28/2029
DOL	DOL	*****4772	R.W. LOBDELL CONSTRUCTION LLC		635 WEST DRYDEN ROAD FREEVILLE NY 13068	01/31/2025	01/31/2030
DOL	DOL	*****2633	RAW POWER ELECTRIC CORP.		3 PARK CIRCLE MIDDLETOWN NY 10940	07/11/2022	07/11/2027
DOL	DOL		ROBBYE BISSESAR		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	01/11/2003	01/11/3003
DOL	DOL		ROMEO WARREN		161 ROBYN RD MONROE NY 10950	07/11/2022	07/11/2027
DOL	DOL		ROSA GARCIA		411 THEODORE FRMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL	*****7172	RZ & AL INC.		198 RIDGE AVENUE VALLEY STREAM NY 11581	06/06/2022	06/06/2027
DOL	DOL		SAL FRESINA MASONRY CONTRACTORS, INC.		1935 TEALL AVENUE SYRACUSE NY 13206	07/16/2021	07/16/2026
DOL	DOL		SAL MASONRY CONTRACTORS, INC.		(SEE COMMENTS) SYRACUSE NY 13202	07/16/2021	07/16/2026
DOL	DOL	*****9874	SALFREE ENTERPRISES INC		P.O BOX 14 2821 GARDNER RDPOMPEI NY 13138	07/16/2021	07/16/2026
DOL	DOL		SALVATORE A FRESINA A/K/A SAM FRESINA		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13218	07/16/2021	07/16/2026
DOL	DOL		SAM FRESINA		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13218	07/16/2021	07/16/2026
DOL	DA	*****0476	SAMCO ELECTRIC CORP.		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	DA		SILVANO TRAVALJA		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	DOL	*****0440	SOLAR GUYS INC.		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	NYC	*****3661	SPANIER BUILDING MAINTENANCE CORP		200 OAK DRIVE SYOSSET NY 11791	03/14/2022	03/14/2027
DOL	DOL		STANADOS KALOGELAS		485 RAFT AVENUE HOLBROOK NY 11741	10/19/2021	10/19/2026
DOL	DOL	*****3496	STAR INTERNATIONAL INC		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	08/11/2003	08/11/3003
DOL	DOL	*****9528	STEEL-IT, LLC.		17613 SANTE FE LINE ROAD WAYNESFIELD OH 45896	07/16/2021	07/16/2026
DOL	DOL		STEVEN DELISA		411 THEODORE FREMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030

NYSDOL Bureau of Public Work Debarment List 04/17/2026

Article 8

DOL	DOL	*****9150	SURGE INC.		8269 21ST STREET BELLEROSE NY 11426	12/22/2022	12/22/2027
DOL	DOL		SYED MUHAMMAD S. JAFRI A/K/A SHARRUKH JAFRI		4307 28TH AVE ASTORIA NY 11103	10/11/2024	10/11/2029
DOL	DOL		SYED RAZA		198 RIDGE AVENUE NY 11581	06/06/2022	06/06/2027
DOL	DOL		TARLOK SINGH		95-27 116TH STREET QUEENS NY 11419	05/28/2024	05/28/2029
DOL	DOL		TARLOK SINGH		95-27 116TH STREET QUEENS NY 11419	07/12/2024	07/12/2029
DOL	DOL	*****4855	TECH INDUSTRIES LLC		20 HEATHER RIDGE ROAD TROY NY 12180	05/20/2025	05/20/2030
DOL	DOL	*****9733	TERSAL CONSTRUCTION SERVICES INC		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13208	07/16/2021	07/16/2026
DOL	DOL		TERSAL CONTRACTORS, INC.		221 GARDNER RD P.O BOX 14POMPEI NY 13138	07/16/2021	07/16/2026
DOL	DOL		TERSAL DEVELOPMENT CORP.		1935 TEALL AVENUE SYRACUSE NY 13206	07/16/2021	07/16/2026
DOL	DOL	*****2426	THE MATRUKH GROUP, INC.		4307 28TH AVE PO BOX 9082ASTORIA NY 11103	10/11/2024	10/11/2029
DOL	DOL		THOMAS LOBDELL		635 WEST DRYDEN ROAD FREEVILLE NY 13068	01/31/2025	01/31/2030
DOL	DOL		TIMOTHY PERCY		29807 ANDREWS ROAD BLACK RIVER NY 13612	10/17/2023	10/17/2028
DOL	DA	*****1050	TRI STATE CONSTRUCTION OF NY CORP.		50-39 175TH PLACE FRESH MEADOWS NY 11365	03/28/2022	03/28/2027
DOL	DA	*****4106	TRIPLE H CONCRETE CORP		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	*****8485	TULA PLUMBING AND HEATING LLC		120 SEARS AVE ELMSFORD NY 10523	09/26/2025	09/26/2030
DOL	DOL	*****8210	UPSTATE CONCRETE & MASONRY CONTRACTING CO INC		449 WEST MOMBSHA ROAD MONROE NY 10950	06/06/2022	06/06/2027
DOL	DOL		VINCENT CORRAO		PO BOX 393 NANUET NY 10954	09/17/2024	09/17/2029
DOL	DOL		WILLIAM A BELL		7307 WOODSIDE ROAD VICTOR NY 14564	05/06/2025	05/06/2030
DOL	DOL	*****8266	WILLIAM CHRIS MCCLENDON	MCCLENDON ASPHALT PAVING	1646 FALLS STREET NIAGARA FALLS NY 14303	05/01/2023	05/01/2028
DOL	DOL		WILLIAM CHRIS MCCLENDON		1646 FALLS STREET NIAGARA FALLS NY 14303	05/01/2023	05/01/2028
DOL	DOL		WILLIAM SCRIVENS		4192 SIR ANDREW CIRCLE DOYELSTOWN PA 18902	07/18/2024	07/18/2029
DOL	DOL	*****9494	WND CONSTRUCTION LLC		411 THEODORE FREMD AVENUE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL		XENOFON EFTHIMIADIS		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028

010000 General Requirements

010000 General Requirements Reference Documents bound after 017900

1. Construction Fire Safety Weekly Review form
2. Statement of Special Inspections forms
3. Submittal Log
4. Campus specific general requirements, if any

01 11 00 Description of Work (Section A)

1. Work to be Done
    a. 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 071099-00 titled Replace Storefront and Exterior Doors – Bartle Library, University Union, and Couper Administration Building
    b. and carrying out all of the duties and obligations imposed upon the Contractor by the Contract Documents.
    c. The main features of the Work shall include, but not be limited to the following:
        i. Asbestos abate all materials as indicated.
        ii. Provide temporary partitions and egress signage around each work area as project progresses.
        iii. Remove existing materials as noted in contract documents.
        iv. Prepare existing openings to receive new materials
        v. Install materials noted in contract documents to ensure a complete, fully functional, and operational system.
2. Work Not Included:
    a. 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

071108 Replace Roofs (Couper Administration)
071123 Replace Pavers (University Union)

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.

3. 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.
4. 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.

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

1. 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
   a. 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 Sections 2.01 and/or 2.08 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 "Nicole Bouteiller"; in the line starting with Title, insert "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) 807-7348" and in the line starting with E-mail address, insert "Nicole.Bouteiller@suny.edu".

2. NOT USED

3. 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 / sole source shown in Specification Section 01 00 00 General Reference Documents, 7. Sole or Single Source Approval Request where the use of another product is not permitted."

"Building Management System (BMS) – Siemens."

4. 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."

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

1. For unmetered utilities used during the work, Contractor's use shall be at no cost to the Contractor for usage that is reasonable and directly related to the work.

01 31 00 Project Management Procedures

1. 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_1-2023.pdf

01 31 00 10 Single Contract Responsibility

1. 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

1. 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

1. 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:
   a. NONE.

01 31 19 Field Meetings

1. 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.

2. 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.

3. 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.

4. The personnel representing the Contractor and its principal subcontractors shall have the authority to make decisions directly affecting the work.

5. 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 not 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. None

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.

2. Agenda: Review and discuss applicable requirements of the Work for the following:
   a. Compliance with Contract Documents and related field or change orders
   b. Submittals, products, and mock-ups
   c. Manufacturer's recommendations
   d. Warranty requirements
   e. Employment of competent and suitable workers and equipment
   f. Deliveries, storage, and handling
   g. Possible conflicts and compatibility problems
   h. Schedule
   i. Weather limitations
   j. Compatibility of materials
   k. Acceptance of substrates
   l. Quality Assurance
   m. Testing and inspecting requirements (including Special Inspections)
   n. Temporary facilities and controls
   o. Space and access limitations
   p. Regulations of authorities having jurisdiction
   q. Required performance results
   r. Protection of completed construction
   s. 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 Contractor shall be permitted to start field-Work subject to the following.

    a. 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.

    b. 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.

    c. 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.

    d. Submit the Safety Procedures Manual required in Paragraph 01 35 23, "Safety and Protective Facilities," below.

2. In order to assist the Contractor in the planning and scheduling of construction activities, the Contract 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.

a. 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.
    i. 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.

b. 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.

    i. https://www.binghamton.edu/apps/calendar/

c. 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. Sequence the Work in phases to meet the following interim milestones dates:

    i. Coordinate the Construction Schedule and Project milestones with the Owner's academic calendar. Schedule applicable Work to coincide with academic breaks and perform the Work in accordance with the phasing and sequencing requirements indicated on the Regulatory Drawings.

d. 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, or other times that are convenient for the Campus, and comply with the following:

3. 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.

4. No material or equipment shall remain inside the building unless in the active use and control of Contractor personnel.

5. 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.

01 32 13 10 Scheduling of Work - Contractor's Coordination with locality

1. Contractor's Coordination with locality: Construction traffic off Campus shall be coordinated with the local Department of Public Works and Public Safety Department (insert telephone number). The construction entrance and restrictions shown have been negotiated between the locality and the Owner. The Contractor shall submit a plan showing which off Campus streets will be used to access the Work areas shown for all Work of this contract. The plan for each route used shall indicate types of vehicles, loading, anticipated vehicular noises, calendar days and hours of use, and other reasonable information that may be requested by the Consultant. The Contractor shall provide all necessary notification and training to personnel operating vehicles associated with this project to assure that the routes are followed in compliance with the restrictions. Sequence traffic of this Contract to coordinate with and not reduce the current usage of off Campus streets.

2. Monthly meetings, in addition to those scheduled below in the paragraph 01 31 19 "Field Meetings", shall be held with the Contractor, locality, Fund, Campus and Consultant at the locality's offices. Topics for discussion may include the connections to the locality owned infrastructure, local events, contractor's traffic and delivery plan through off Campus streets and idling of construction vehicles.

01 32 13 20 Scheduling of Work - Contractor's Coordination with the with utility companies

1. Not Applicable

01 32 16 Project Schedule

Project Schedule shall include the following:

a. After receipt of the Notice of Award but before receipt of the Notice to Proceed, the Contractor, unless otherwise directed by the Fund, shall update the working plan and schedule previously submitted in accordance with the Information for Bidders to define the contractor's planned operations during the first 120 days and submit it to the Fund and the Consultant for their acceptance. The updated 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. When updated, such plan and 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. The Notice to Proceed may be withheld until this schedule is received and is deemed responsive to the project requirements.

b. After receipt of the Notice to Proceed but before processing second progress payment application, the Contractor, unless otherwise directed by the Fund, shall submit to the Fund and the Consultant for their acceptance its proposed working plan and project time schedule for all the Work covered by the Contract, and shall include activities for preparation and submission of all Shop Drawings and Samples and show all Contractor provided tests that are specified in Divisions 1 through 48, inclusive**.** Said proposed working plan and schedule shall be prepared in accordance with the form and requirements set forth in the preceding paragraph. 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. Submit four (4) printed copies, one PDF and the electronic file in its native format.

c. The aforesaid proposed working plan and schedule shall be revised by the Contractor until they are satisfactory to the Fund and the Consultant, and the same shall be periodically updated monthly thereafter. Whether or not the Consultant and the Fund have accepted the Project Schedule, submit the Project Schedule to the Fund and the Consultant for acceptance at such time or times as the Fund or the Consultant may request.

d. The proposed working plan and schedule, including any revision or revisions thereof, when accepted by both the Fund and the Consultant will become the Schedule of Record (SOR). The SOR, as the same may be revised as stated above by the Contractor and accepted by the Fund and the Consultant, shall be strictly adhered to by the Contractor.

e. 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.

2. Milestone Dates & Summary Activities

Notice to Proceed (Milestone Date)

b. Mobilization
c. Environmental & Abatement
d. Site Preparation & Foundations
e. Building Frame & Enclosure
f. 6) M-E-P-S (Mechanical, Electrical, Plumbing, Sprinkler & Fire Systems) Rough-In & Major Equipment Installation
g. M-E-P-S Systems-Fixtures/Trim/Accessories
h. Interior General Construction

i. Equipment & Specialties
j. Exterior Walks, Parking, Roads, & Landscape
k. Testing, Training & Commissioning
l. Life Safety Systems Tested & Accepted (Milestone Date)
m. Substantial Completion/ C of O (Milestone Date)
n. Campus Installed/Furnished FF&E (Fixtures, Furnishing & Equipment)
o. Start of Guarantee Period
p. SUCF Contract Completion Date (if different from above)
q. Final Completion - All punch list/outstanding items satisfied (Milestone Date)
r. 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.)
s. Other milestones as may be required by the Fund, the Consultant or the Contractors – specifically list any significant product whose source is outside of the United States.

3. 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:

i. Testing activities / required inspections (Show Contractor provided tests that are specified in Divisions 1 through 48, inclusive, and Consultant performed tests, where applicable).
ii. Subcontractor selection and approvals (major subcontractors submitted within 48 hours of bid).
iii. 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.

iv. Procurement schedule (order dates, fabrication, deliveries, and long lead items – specifically list any significant product whose source is outside of the United States).

v. Special Campus restrictions, i.e., Campus approvals for Work site access, shutdowns and other impacts (noise/ testing & examination/ site and building access etc.).Requirements for any on site shutdowns that may impact work.

vii. Training and/or instruction of Campus personnel.

viii. Commissioning of major building systems including pre-functional testing, startup, functional testing, operational scenario testing and retesting as required.

ix. Campus furnished products installed by the Contractor.

x. Periodic meetings on construction fire safety with the Campus Fire Prevention Program Superintendent and other interested parties.

xi. 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:

    i. 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.

ii. 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.

iii. 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.

iv. 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.

v. 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.

vi. 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.

Whether or not the Consultant and the Fund have accepted the Project Schedule, the Schedule of Record shall be updated bi-weekly 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.

viii. 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 as follows: 1.) if more than 120 calendar days remains until the date of Substantial Completion then provide within 30 calendar days after the Consultant's request, 2.) if less than 120 calendar days remains until the date of Substantial Completion, provide within 15 calendar days after the Consultant's request. The recovery schedule's 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.

ix. 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

i. Notice to Proceed (Milestone Date)
ii. Mobilization
iii. Environmental & Abatement
iv. Site Preparation & Foundations
v. Building Frame & Enclosure
vi. M-E-P-S (Mechanical, Electrical, Plumbing, Sprinkler & Fire Systems) Rough-In & Major Equipment Installation
vii. M-E-P-S Systems-Fixtures/Trim/Accessories
viii. Interior General Construction
ix. Equipment & Specialties
x. Exterior Walks, Parking, Roads, & Landscape
xi. Testing, Training & Commissioning
xii. Life Safety Systems Tested & Accepted (Milestone Date)
xiii. Substantial Completion/ C of O (Milestone Date)
xiv. Campus Installed/Furnished FF&E (Fixtures, Furnishing & Equipment)
xv. Start of Guarantee Period
xvi. SUCF Contract Completion Date (if different from above)
xvii. Final Completion - All punch list/outstanding items satisfied (Milestone Date)
xviii. 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.)
xix. 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.

3. Refer to Article II Section 2.02 for Contractor's 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 10 Photo Documentation Services

1. Not Applicable

01 32 33 30 Roof Inspection

1. Not Applicable

01 33 23 Shop Drawings, Samples, Submittals and other information - (Refer to Section 2.19 of the Agreement)

1) 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 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:

i. 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.
ii. Utilize 256-bit SSL encryption and hosted at SAS70 Type II compliant data centers.
iii. Minimum four (4) years' experience of use on comparable commercial construction projects.
iv. Website requirements:
    1. Minimum of four years documented 99.5% website uptime.
    2. b) Minimum on-line storage required for the duration of this Contract (until final closeout).
    3. 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 zero (0) Record Paper Copies:
    i. Paper copies shall be printed in a size format equal to the original document.
    ii. Scaled Shop Drawings shall be printed to the scale noted on the drawings.
    iii. 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.

d. *"REVISE AND RESUBMIT"* Contractor shall correct and resubmit.

e. *"MAKE CORRECTIONS NOTED"*: The contractor shall comply with corrections and may proceed. Resubmittal is not required.

f. *"APPROVED - NO EXCEPTIONS TAKEN"*: The contractor may proceed.

g. 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.

h. 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.

i. All shop drawings, submittals and samples shall include:
ii. Date and revision dates.
iii. Project title and number.
iv. Names of:
v. Contractor
vi. Subcontractor
vii. Supplier
viii. Manufacturer

i. Provide information regarding shop drawings, submittals and samples at the Periodic Meetings.

j. 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.

k. 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 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

1. Not Applicable

01 33 29 - Sustainable Design Reporting

When submission of environmental product declarations (EPDs) is required by the technical specifications, in addition to the individual EPD submittals, submit a list summarizing the materials/products covered by each EPD submittal and the estimated total quantities used/installed of such covered materials during the Work completed to date. As directed by the Consultant, the list shall be submitted/updated annually and at Substantial Completion. If the submitted EPDs do not show the kgCO2 per the quantity unit used/installed for a covered material, provide such information upon request of the Consultant. Using the list and other information, the Consultant will calculate the estimated total kgCO2 (kilograms of carbon dioxide) emission equivalent for each covered material/product used/installed.

01 35 10 Archeological or Historical Finds

1. 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. Within two business days after receipt of the Consultant's direction, remove any postings, defacement, marking, carving, graffiti, or other non-Contract related information on Site at no additional cost to the Fund.
   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.
   g. ID Badges:
      i. Not Applicable

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

1. 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:
   a) Recoverable items will be identified by the Campus and labeled on site during or prior to demolition

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) 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.

d) 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.

e) 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.

f) 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 Chapter 33 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 Safety Data Sheet

1. 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 Public Health/Safety Requirements and Guidance for Construction Jobsites

1. The Contractor shall comply 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 in effect at the time of the bid. Such health and safety requirements are made a part of the Contract Work for this Project. All costs and time associated with compliance with such health and safety requirements are included in the Contract consideration in Article IV of the Agreement.

01 35 43 Environmental Procedures

1. 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 emission of construction related odors is found to be offensive by building staff, Work will stop and effects 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

1. 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.

2. Schedule of Delegated Design in the Technical Specifications:

Project No. 071099-00
Project Title: Replace Storefront and Exterior Doors – Bartle Library, University Union, and Couper Administration Building

Section Number	Section Name	Description of Delegated Design (See Section for complete details)
08 41 13	Aluminum-Framed Entrances and Storefronts	
08 44 13	Glazed Aluminum Curtain Walls	
08 88 00	Glazing	
21 10 00	Water-Based Fire - Suppression System	

Note: The above list provides a general summary of work delegated in the technical specifications an 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.
    b) Prior to start of Work that requires code inspections, schedule pre-inspection meeting with the Consultant, Fund and Campus review required inspections and how and when they will be performed.

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. 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 41 16 Laws

1. "Diesel Emissions Reduction Act of 2006 (the “Act”):

    a. 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.

    b. 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:	https://www.dec.ny.gov/fs/docs/spreadsheets/248inventory.xlsx
Annual Report Form	https://www.dec.ny.gov/fs/docs/spreadsheets/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. Title 10 of the New York Codes of Rules and Regulations (10 NYCRR), Part 4, “Protection against Legionella”
    a. If the project involves the installation or modification to a “Cooling Tower” as defined per the NYCRR, the Contractor is responsible to provide maintenance, testing and reporting. These responsibilities begin upon startup and operation of the “Cooling Tower” or anytime it contains water, it shall continue until the date of the end of the “one-year guarantee period” as defined per Section 2.25 of the Agreement.

        i. The Contractor’s maintenance program and testing plan shall be submitted to the Fund, Campus and the Consultant for review and approval.
        ii. The Contractors testing services shall include routine and immediate bacteriological and Legionella culture sampling and analysis as required per the NYCRR. It shall also meet all the requirements in the Campuses “Cooling Tower” maintenance program and plan developed for compliance with 10 NYCRR.
            1. Documentation of all maintenance, testing and reporting of the results shall be provided to the Fund and the Campus.

iii. Copies of all maintenance and testing records shall be kept on the premises where the "Cooling Tower" is located.

4. Comply with Labor Law Section 220-i, which requires contractors and subcontractors engaged in public work to be registered with the New York Department of Labor.

5. State Finance Law 136-d*2

   a. Contractors shall certify for each of the low embodied concrete mixes utilized on the project that they comply with all the requirements listed in contract documents. Submit an environmental product declaration (EPD), and documentation identifying the Global Warming Potential (GWP) for each of the concrete mixes.

01 51 13 Temporary Power for Construction Activities

1. Electrical energy, as/if it exists within the Work area may be used for small power tools, etc. (≤1/2 HP), without metering and at no cost to the Contractor. Usage shall be limited to existing outlets and/or panels within the Work areas shown or as approved by the Campus. 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 provide and maintain all necessary items to provide temporary power for the project and remove at completion. Install all temporary wiring and equipment and make all connections in conformity with NYS Uniform Fire Prevention and Building Code, National Fire Protection Association, National Electric Code, and all other applicable codes. 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 provide, maintain, and keep in use sufficient 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.

01 51 23 Temporary Heating and Cooling

1. Provide temporary HVAC in the entire Work area(s) as soon as practical. Existing HVAC system, if available, may be utilized to provide some or all temporary HVAC.
   a) When the building or significant portion of the building is enclosed, use temporary HVAC to maintain environmental space conditions within specified parameters, to cure or dry completed installations, to protect installed/existing materials from adverse effects of temperatures or humidity levels, and/or to prevent freezing of hydronic systems.
   b) When the building or portions of the building is unenclosed and as required to properly perform the work, protect existing building/work in place, and/or maintain environmental conditions within specified parameters, provide suitable temporary enclosures, weather protection, additional temporary HVAC, and other temporary work.
2. If an existing HVAC system exist within the Work area, it is available for use by the Contractor. It is the Contractor's responsibility to determine if the existing HVAC will be able to provide the minimum temperature and humidity levels required during the work; otherwise, provide a temporary HVAC system(s) as required to supplement deficiencies in the existing HVAC system.
3. Temporary HVAC shall be installed, extended, modified, operated, and maintained by the Contractor until Substantial Completion.
   a) Where existing HVAC systems in the Work area(s) rely on Campus controlled portions, the Campus will continue to operate and maintain their portions in the same manner performed prior to bidding. With Campus permission, Contractor may rebalance Campus controlled portions.
   b) Where existing HVAC systems outside the Work area(s) rely on Contractor controlled portions, the Contractor will operate and maintain its portions in a manner that properly maintains the service required by the Campus and comply with Section 01 18 13 Utility Shutdowns and Cutovers for planned outages. Unplanned outages shall be addressed in the emergency action plan required in Section 01 35 13 Conducting Work. When directed by the Consultant, rebalance Contractor controlled portions as required to provide proper service to systems outside the Work area(s).
4. Temporary HVAC shall be capable of maintaining temperatures between 68°F to 78°F and relative humidity's below 55%, unless otherwise specified by the Contract Documents. If materials being installed, finished and /or maintained require stricter temperature and relative humidity's ranges per the material manufacturer(s) written recommendations, provide additional temporary HVAC to provide manufacturer required conditions during the time periods recommended by the manufacturer(s).
5. To monitor and record temperature and humidity levels, provide a minimum of two (2) data loggers per Work area plus one additional data logger for each additional 5,000 square foot of Work area.

a) The initial location of the data loggers and any relocation required during the progression of the project shall be as directed by the Consultant.
b) Periodically transfer electronic data, change batteries, and perform other maintenance needed to keep the data loggers functional at all times during the work. Show the locations, date installed, and date moved in records available upon request of the Consultant. Also upon request, provide the electronic data shall to the Consultant.
c) Data loggers shall be HOBO MX1101 by Onset or equivalent with Accuracy: +/- 0.2C and +/- 2%RH

6. The Contractor is solely responsible for damages to existing/new work, materials and/or equipment within the Work area(s) caused by the failure of the Contractor to maintain the required environmental space conditions temperature and humidity levels. Damaged materials and/or equipment shall be replaced to the satisfaction of the Consultant and at the sole cost and expense of the Contractor.
7. Temporary HVAC systems shall comply with NYS Uniform Fire Prevention and Building Code, National Fire Protection Association, and all other applicable codes.
8. The permanent HVAC system of the Project may be used by the Contractor, with the approval of the Consultant and the Fund, to provide temporary HVAC. In the event the Contractor so uses the permanent HVAC system:
   a) It must place said system in perfect working order and in essentially new condition prior to the Fund's acceptance of the Project.
   b) The period of the guarantee of the permanent HVAC system will commence at the time of the Substantial Completion of the Project.

01 51 26 Temporary Light

1. Provide temporary lighting in the entire Work area(s) as soon as practical. Existing lighting, if available, may be utilized to provide some or all temporary lighting. Extend/relocate/modify/maintain temporary lighting to suit progress of work.
2. Provide a minimum of 10-foot candles in the entire Work area(s) as measured at the floor level. In stairs and exit aisles/paths/ways, maintain lighting levels for 24 hours, 7 days per week; in all other spaces, maintain temporary lighting during working hours.
3. All temporary lighting shall comply with the NYS Uniform Fire Prevention and Building Code, National Fire Protection Association, National Electric Code, and all other applicable codes.
4. Unless otherwise directed by the Consultant, operate and maintain temporary lighting until Substantial Completion.

01 51 36 Temporary Water for Construction Purposes

1. 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

Within two (2) weeks of receipt of the Notice to Proceed, provide for the services and new equipment listed below at the existing field office space used by the Site Representative(s).

1. Four (4) hard hats, adjustable, plus safety glasses and vests.

2. Office Supplies shall be new and consist of the following items:
   a. One (1) iPad-9th Generation iPad with otter box defender cast; include Bluebeam review. iPad shall have cellular communication enabled and be provided with a cellular plan for the duration of the project.
   b. One (1) Epson Workforce Pro EM-C7100 printer, with printer cables, network card, ink cartridges and support.
      1. Provide 1 box of 8-1/2" x 11" paper and 1-box of 11" x 17" paper, every 6-months, for the duration of the project.
   c. One (1) digital camera equal to an Olympus Stylus Tough TG-4 digital camera with two (2) additional compatible 32 GB memory cards.
   d. Supplies: (1) stapler, (6) boxes of staples, (3) boxes each of black, blue and red pens, (2) boxes of pencils, (2) boxes of multicolor highlighters, a 3-sided scale ruler.
3. Snow removal as specified in Section 01 55 29, Staging Area and Storage of Materials.

01 52 19 Temporary Sanitary Facilities

1. The Contractor shall install, maintain and, at the completion of all Work or at such earlier time as the Consultant may approve, remove temporary sanitary facilities. From the commencement of Work until the frame of the structure, if the Project involves a structure, is erected, such facilities shall be of the chemical type, shall be placed at locations approved by the Consultant and shall be screened from the Campus population/public. As soon as the frame of the structure has been erected, water supply and sanitary drainage connections shall be promptly made by the Contractor and temporary toilets, using the permanent piping system of the structure, shall be installed by the Contractor and maintained by it until completion, at which time they are to be removed by it. Permanent toilets and room finishes installed under the Contract shall not be used during construction of the Project unless the Contractor has an approved plan for periodic custodial services that maintain toilets and finishes in like new condition until their acceptance by the Fund.
   a. The amount of sanitary facilities required shall be based on the total number of workers employed on the Project and shall be in accordance with the provisions of the Health and Sanitary Codes of the State of New York. Maintain all units in a clean and sanitary condition. At the minimum, clean on a weekly basis, and more often as required by the applicable sanitary codes for this occupancy. Provide all toilet supplies as required, including toilet paper, soap, paper towels, and waste receptors.

01 54 13 Use of Elevator(s) for Construction

1. Elevators are not required for use to complete scope of work.

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. 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.

a. Refer to Campus General Requirements for additional information.

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

1. Not Applicable

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 and Section 302 Property Maintenance 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 incompliance 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 black vinyl coated 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. Contractor shall clear the pedestrian walkways & access ways of snow along all perimeter locations. Contractor is also responsible for keeping clean and year round maintenance of all temporary pedestrian walkways surrounding the project Site. Snow outside the above areas and Contract Limits will be removed by others. Snow removal must be completed no later than 6:30 am each day (Off-hour Work shall be included at no additional charge).

01 56 19 Noise Mitigation Measures

1. Employ the following measures during the Work of this contract:

2. 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.

3. 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.

4. 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.

5. 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.

6. 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.
    a) For other work besides such nuisance work, 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 65 VdB 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.

b) At any time during the work, noise shall not exceed 90 dBA in hour and vibrations shall not exceed 90 VdB.

01 57 23 Storm Water Construction Permit Responsibilities

1. Not Applicable

01 58 13 Project Sign

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.

01 60 00 10 U.S. Steel

1. 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

1. 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

1. The Campus will furnish products from the named manufacturer(s) indicated that are currently available using New York State Office of General Services (OGS) Procurement Contracts (State Contract) in existence on the day bids are received.
   a) Refer to Section 08 71 00 – Door Hardware
   (Campus provided not from OGS)

2. Except for furnishing the products indicated above, the Contractor will be responsible for using, performing, installing, furnishing and supplying of all materials, equipment, skill and labor of every

kind, incidentals, and also those things which may be reasonably inferable from the Contract Documents as being necessary or proper for or incidental to the successful completion of the systems into which the products are installed; and the Contractor will be responsible for carrying out of all duties and obligations imposed by the specification sections that include Campus furnished products. The Contractor's responsibilities are same as if Contractor had furnished the products, including providing other products from the named manufacturers that are not currently available on State Contract, which are necessary for the complete installation of the systems specified.

3. The named manufacturer shall review its makes or model numbers and/or other designations listed in its State Contract and it shall allot all the Work required of it in this Contract between its existing State Contract and its subcontract with the Contractor. Whatever the allotment, the named manufacturer acknowledges that it will make its Work complete and operational and in compliance with good practice and it agrees that inadvertent minor discrepancies or omissions shall not be the cause for additional charges or claims.
   a) The Fund, Campus and the Consultant assume no responsibility whatever for this allotment, except that the Campus agrees to purchase the named manufacturer's products using the State Contract.
   b) The named manufacturer shall provide a list of the products, in the form prescribed by OGS, which the Campus will provide from State Contract.
   c) At the time the Campus furnished products are required for the work, if such products are no longer available on State Contract, the Contractor shall provide comparable products of the named manufacturer and, in such event, the Contract consideration shall be increased by an amount to be determined in accordance with the provisions of Section 4.02 of the Agreement.

4. Employ competent and suitable workers and equipment which meet the quality assurance recommendations and requirements of the named manufacturer and the specifications. Work involving installation of fire alarm system components shall be performed by a firm currently licensed by the NYS Department of State, Division of Licensing Services. Provide labor and equipment for receiving, unloading, handling, storing, protecting, and installing Campus-furnished products, including making building services connections to Campus networks, system adjustment and calibration, system testing and acceptance, programming related to software and graphics, training of Campus staff, and other services specified.

5. Provide shop drawings, devices counts, field measurement and other submittal information specified. Examine the Work areas and Contract Documents to confirm suitability of products, number and type required and submit detailed list of products, devices and accessories for review. After approval of the list, resubmit it incorporating corrections, if any, requested by the Consultant. Campus will use the list to place the State Contract order. Allow up to 4 weeks for the Campus to finalize the order and 12 weeks for delivery of items in the order in the Time Progress Schedule.

6. Provide accessories, trim, finish, fasteners, and other material needed for a complete installation and indicated use and effect for the products provided by the Campus. Provide construction means, methods, equipment, etc., compatible with products provided by the Campus. If a dispute arises over concurrently selectable but incompatible products, the Consultant will determine which products shall be used.

7. Take delivery, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with the named manufacturer's written instructions.

    a) Schedule delivery with the Campus to minimize long-term storage at Project Site and to prevent overcrowding of construction spaces. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged or sensitive to deterioration, theft, and other losses.

    b) Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected. Store products to allow for inspection and measurement of quantity or counting of units. Store products under cover in a weather-tight enclosure above ground, with ventilation adequate to prevent condensation. Comply with named manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage. Protect stored products from damage and liquids from freezing.

8. Warranties specified shall be in addition to, and run concurrent with, other warranties required by the State Contract.

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	Lubicate 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

a. Prior to delivery of equipment to the Site or storage location, submit the Log to the Consultant for approval.
b. After delivery of equipment, upon periodic requests of the Consultant, submit the Log for inspection and review.
c. Prior to acceptance of equipment, submit the Log showing all maintenance activities completed for the equipment proposed for acceptance.
d. Provide timely notification and access for the Consultant and the Fund to witness any preventive maintenance activities listed in the Log.
e. 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

1. Not Applicable

01 71 36 Non-Destructive Building Examination

1. 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

1. Not Applicable

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. Demolition and removal Work on Site shall be limited to the minimum work required to create debris that allows for reasonable handling and transport. Additional work on debris, 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.
   e. 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.
   f. 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.

g. 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.
h. 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.

2. 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, implement a construction and demolition (C&D) waste management plan which recycles at least 50% of the non-hazardous building C&D waste generated.
    a. In conjunction with monthly payment applications, submit a waste management reporting form for all materials transferred from the project site for recycling or disposal. Reporting form shall:
        i. Include receipts or other documentation from the disposal and/or recycling facility of the quantity and type of materials transferred.
        ii. Provide the name and address of the disposal facilities and/or recycling facilities where materials will be disposed or recycled.
        iii. Report all the material quantities either by weight or volume. To convert volume into weight use the US EPA conversion rates.
        iv. 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.
        v. Show the percentage of recycling achieved to date.
    b. Within 30 days after Substantial Completion, submit the total quantities for all C&D and the percentage of materials which were recycled.
    c. 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. 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 75 10 Consumables used during the Work.

Except for energy, fuel, and/or water specified as provided by the Campus, provide all consumable parts, fluids, gases, materials, products, energy, and fuel(s) required for transporting, assembling, erecting, installing, start-up and commissioning, and testing of the materials prior to Substantial Completion, including consumable supplies normally consumed in the assembly, erection, installation, start-up and commissioning, and testing, and maintenance of the Work until Substantial Completion of the Project. Such consumable parts shall not include any spare parts, attic stock, or any consumable parts specified in Divisions 1 through 48, inclusive, for turnover to the Campus.

01 78 23 Operations and Maintenance Manuals (O&M's)

1. O&M's Submissions
    a. The O&M's applicable to this Contract must be substantially completed before the Project can be used for the purpose for which it was intended.
    b. In accordance with the approved submittal schedule in Section 01 32 16 Project Schedule, provide the applicable O&M's as required per the Submittal sections of the Technical Specifications for review, concurrent with all other required submittals.
    c. Assemble and submit final O&M's prior to requesting inspection for Substantial Completion and at least 45 days before the training detailed in section 01 79 00 Training of Campus Personnel and the applicable Technical Specifications. Consultant and Commissioning Authority (CxA) will provide comments on the final O&M's within 15 days of receipt.
        i. Correct or revise each manual to comply with Consultants and CxA's comments. Submit copies of each corrected O&M's within 15 days of receipt of the Consultant's and CxA's comments and at least 15 days prior to commencing training detailed in section 01 79 00 Training of Campus Personal and the applicable Technical Specifications.
    d. Unless otherwise approved by the Fund, in the Contract Breakdown required by Section 4.08 of the Agreement, the scheduled value of Contractor provided O&M's shall be 5% of the estimated value for the Work covered in the O&M's
    e. The Contractor shall furnish two (2) complete bound paper copies and PDF/A files of O&M's for all systems, subsystems, and pieces of equipment involved in the Contract. O&M's 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. PDF/A copies shall be 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. All documents shall be 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.
    f. Final copies shall be complete except for copies of original warranties and other items approved by the Consultant for turnover on the date of Substantial Completion.
2. General requirements for O&M's:

a. Organization: Organize the O&M's into separate volumes/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 volumes/sections alphabetically. Each volume shall contain the following materials, in the order listed:
    i. Title Page.
    ii. Table of Contents.
    iii. Volume Contents:
        1. Operation Data.
        2. Product Maintenance Data.
        3. Systems and Equipment Data.
b. Title Page: Include the following information:
    i. Subject matter included in volume
    ii. Name and address of Project and Owner
    iii. Date of submittal
    iv. Name and contact information for:
        1. Contractor and Major Subcontractors.
        2. Construction Manager.
        3. Consultant and Major Subconsultant.
        4. Commissioning Agent.
        5. Cross-references to related system in other O&M's
c. Table of Contents: List each product included in O&M's, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
    i. If O&M's documentation requires more than one volume to accommodate data, include a comprehensive table of contents for all volumes in each volume of the set.
d. Volume Contents: Organize into sets of manageable size. Arrange contents alphabetically by CSI number, system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single volume.
e. Manufacturers' Data: Where O&M's contains manufacturers' standard printed data: include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data includes more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
    i. Prepare supplementary customized narrative text if manufacturers' standard printed data are not available or where project specific information is necessary for proper operation and maintenance of equipment or systems.
f. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of standard component parts of equipment and systems and to illustrate actual control sequences and flow diagrams. Coordinate these drawings with

information contained in Record Drawings to ensure correct illustration of completed installation.

i. Do not bind as part of O&M's the Record Drawings provided in accordance with Section 2.24 of the Agreement.

g. When multiple binders are required, use the same type and size of binder for each volume

h. Internally subdivide the binder contents with permanent page dividers, logically organized as described below, with tab titles clearly printed under reinforced laminated plastic tabs:

i. Use 8-1/2 x 11-inch text pages bound in spring post binders with durable plastic covers and sides identified with printed titles "OPERATION AND MAINTENANCE MANUALS", 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

3. Operation Data
    a. Content: Organize Operation Data into a separate section, within the O&M's.
    b. Engage a manufacturer authorized service representative(s) to provide and prepare the information.
    c. Prepare a separate section indicating operation of each system and subsystem, and piece of equipment not part of a system in the form of an instructional manual for use by operating personnel.
    d. In addition to requirements in this section include operation data as required in the Technical Specification sections.
        i. System, subsystem, and equipment descriptions. Use designations for systems, subsystems and equipment indicated on Contract Documents.
        ii. Operating standards.
        iii. Operating procedures.
        iv. Operating logs.
        v. Wiring diagrams, as installed.
        vi. Control diagrams, as installed. Describe the sequence of operation, and diagram controls as/where required for identification.
        vii. Piped system diagrams, as installed and identify color-coding as installed.
        viii. Precautions against improper use.
        ix. License requirements, if any, including inspection and renewal dates.
    e. Description of system, subsystem, or equipment, as applicable, including:
        i. Product name and model number. Use designations for products indicated on Contract Documents.
        ii. Manufacturer's name.
        iii. Equipment identification with serial number of each component.
        iv. Equipment function.
        v. Operating characteristics.
        vi. Limiting conditions.
        vii. Performance curves.
        viii. Engineering data and tests.
        ix. Complete nomenclature and number of replacement parts.

f. Operating instructions and procedures, including:
    i. Startup procedures.
    ii. Equipment or system break-in procedures.
    iii. Routine and normal operating instructions.
    iv. Regulation and control procedures.
    v. Instructions on stopping.
    vi. Normal shutdown instructions.
    vii. Seasonal and weekend operating instructions.
    viii. Required sequences for electric or electronic systems.
    ix. Special operating instructions and procedures.

4. Product Maintenance Data
    a. Content: Organize Product Maintenance Data into separate section, within the O&M's, for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
    b. Source Information: List each product included in section identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross reference specification section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
    c. Product Information: Include the following, as applicable:
        i. Product name and model number.
        ii. Manufacturer's name.
        iii. Color, pattern, and texture.
        iv. Material and chemical composition.
        v. Reordering information for specially manufactured products
    d. Maintenance Procedures: Include manufacturer's written recommendations and the following:
        i. Inspection procedures.
        ii. Types of cleaning agents to be used and methods of cleaning.
        iii. List of cleaning agents and methods of cleaning detrimental to product.
        iv. Schedule for routine cleaning and maintenance.
        v. Repair instructions.
    e. Repair Materials and Sources: Include a list of materials and local sources of materials and related services.
    f. Warranties and Guarantees: Include copies of warranties and guarantees lists of circumstances and conditions that would affect validity of warranties.
        i. Include procedures to follow and required notifications for warranty claims.
5. Systems and Equipment Maintenance Data
    a. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers maintenance and documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

b. Source Information: List each system, subsystem, and piece of equipment included in a separate section within the O&M's identified by product name, and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
c. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
    i. Standard maintenance and repair instructions and bulletins.
    ii. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
    iii. Identification and nomenclature of parts and components.
    iv. List of items recommended to be stocked as spare parts with parts identified and cross-referenced to manufacturers' maintenance documentation.
d. Maintenance procedures: Include the following information and items that detail essential maintenance procedures:
    i. Test and inspection instructions.
    ii. Troubleshooting guide.
    iii. Precautions against improper maintenance.
    iv. Disassembly; component removal, repair, and replacement; and reassembly instructions.
    v. Aligning, adjusting, and checking instructions.
    vi. Demonstration and training video recording, if specified.
e. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
    i. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
    ii. Maintenance and Service Record: Include manufacturers' forms for recording maintenance and inspection.
f. Spare parts list and source information: Include list of replacement repair parts, with parts identified and cross referenced to manufacturers' maintenance documentation and local sources and maintenance materials and related services.
g. Warranties: Include copies of warranties and list of circumstances and conditions that would affect validity of warranties.
    i. Include procedures to follow and required notifications for warranty claims.

01 78 36 Warranties

1. 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.

a. All warranties required by Contract Documents shall commence on date / time of Substantial Completion shown on Page A-1 of the Agreement.

    i. 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.

b. 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.

    i. 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.

    ii. 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.

c. 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.

d. 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.

    i. 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.

    ii. 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.

    iii. Deliver the binder to the Consultant with the written notice of Substantial Completion required by Section 2.23(2) of the Agreement.

e. 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.

2. 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

1. 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.

3. Refer to technical specification sections for additional training.

****End of 01 00 00 General Requirements***

PROJECT No. 071099-00

Contractor Job #:

Project Name: Replace Storefront and Exterior Doors- Bartle Library, University Union and Couper Administration Building

Revised By:

DATE:

Status Key: **NYS** - Not Yet Submitted **SCH** Scheduled for submission **SUB** - Submitted & Recieved **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															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(3)		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 (online only)	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
12		01 31 13 10			Existing Conditions reports	Informational	REP	NYS															if needed
11		01 31 19			bi-weekly reports	Informational	REP	NYS															
13		01 32 13 10			Off campus street access	Informational	REP	NYS															if needed
14		01 32 16			Project Schedule and Submittal Schedule	Action	OTH	NYS															
15		01 32 33			Project Photographs	Informational	REP	NYS															Due prior to work
16		01 32 33			Submittal management website	Action	OTH	NYS															if needed
17		01 32 33			Archival submittals	Informational	OTH																if needed
18		01 33 23 10			Coordination Drawings	Action	SD	NYS															Due prior to work
20		01 35 13			emergency action plan	Informational	DAT	NYS															
21		01 35 13			daily reports	Informational	REP	NYS															Due before waste leaves site
27		01 35 13			daily manpower counts	Informational	REP	NYS															
28		01 35 23			Safety Procedures Manual	Informational	DAT	NYS															
29		01 35 23			Names of "competent" persons	Informational	DAT	NYS															
30		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			Code test and inspection forms	Action	REP	NYS															
37		01 41 13			Name of Commissioning contact	Action	REP	NYS															
24		01 41 16			Diesel vehicle forms	Informational	DAT	NYS															if needed
39		01 41 16			Cooling tower maintenance plan	Action	REP	NYS															
38		01 51 16			Fire watch plan	Action	REP	NYS															
40		01 52 13			Field Office equipment information	Action	REP	NYS															
42		01 55 29			lifting procedure safety plan	Informational	DAT	NYS															if needed
43		01 55 29			Petolium Spill Compliance Certification	Informational	OTH	NYS															
44		01 60 00 20			Vermiculite origins certification	Informational	OTH	NYS															
45		01 64 00			Campus-Furnished Products submittals	Action	SD	NYS															if needed
46		01 66 00			Preventive maintenance log	Action	REP	NYS															
49		01 74 00			Fluid system flushing and Clean Up plan	Informational	DAT	NYS															
50		01 74 00			Final Cleanup Plan	Informational	DAT	NYS															
51		01 74 16			Planting Maintenance logs	Informational	DAT	NYS															

PROJECT No. 071099-00

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Revised By:

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52		01 74 19			Construction Waste Management Plan	Action	OTH	NYS															
53		01 74 19			Construction Waste manifests/monthly reports	Action	OTH	NYS															
54		01 78 23			Operating Instructions and Manuals	Action	OTH	NYS															
55		01 78 36			Warranties	Action	OTH	NYS															
56		01 79 00			Schedule of Campus training	Action	OTH	NYS															
57		01 79 00			Outlines of actual training	Action	OTH	NYS															
58																							
61		02 41 19	1.6 A.		Protection Measures	Informational																	
62		02 41 19	1.6 B.		Sequence of Selective Demolition	Informational																	
63		02 41 19	1.6 D.		Existing Warranties	Informational																	
64		02 41 19	1.7		Salvage Inventory	Closeout																	
65																							
66		02 82 00	1.4 A.		Pre-Abatement - Asbestos	Action	QC	NYS															
		02 82 00	1.4 C.		Post-Abatement - Asbestos	Action	QC	NYS															
		02 83 10	1.02 A. 8.		Pre-Abatement - Lead	Action	QC	NYS															
		02 83 10	2.05 A. 1. b.		Post-Abatement - Lead	Action	QC	NYS															
		02 83 10	1.04 A.		On-site certifications and licenses	Action	QC	NYS															
67		02 84 00	1.4 A.		Pre-Abatement - PCB Caulk	Action	QC	NYS															
68		02 84 00	1.4 B.		Post-Abatement - PCB Caulk	Action	QC	NYS															
72		03 01 30	1.3 A.		Product Data	Action		NYS															
73		03 01 30	1.3 B		Shop Drawings	Action		NYS															
74		03 01 30	1.4 A.		Qualification Data - Manufacturer	Informational		NYS															
75		03 01 30	1.4 B.		Material Certificates	Informational		NYS															
76		03 01 30	1.4 C.		Field quality-control reports	Informational		NYS															
77		03 01 30	1.4 D.		Quality-Control Program	Informational		NYS															
		03 30 00	1.6 A.1.		Shop Drawings	Action		NYS															
		03 30 00	1.6 B.		Mix Designs	Action		NYS															
		03 30 00	1.6 C.		Product Data	Action		NYS															
78		04 01 10	1.5 A.		Product Data	Action		NYS															
79		04 01 10	1.5 B.		Material Certificates	Action		NYS															
80		04 01 10	1.5 D.		Qualification data for Specialists	Action		NYS															
81		04 01 10	1.5 E.		Cleaning Program	Action		NYS															
82		04 01 10	1.6 A.		Qualification data for Pain Remover Manufacturers	Informational		NYS															
83		04 01 10	1.6 B.		Preconstruction Test Reports	Informational		NYS															
84		04 01 20	1.5 A.		Product Data	Action		NYS															
85		04 01 20	1.5 B.		Shop Drawings	Action		NYS															
86		04 01 20	1.5 C. & D.		Samples	Action		NYS															
87		04 01 20	1.6 A.		Qualification Data: for Masonry Repair Specialist	Informational		NYS															
88		04 01 20	1.5 A.		Product Data	Action		NYS															
89		04 01 20	1.5 B.		Shop Drawings	Action		NYS															
90		04 01 20	1.5 D.		Samples	Action		NYS															
91		04 01 20	1.6 C.		Qualification Statements: Masonry Repair Specialist	Informational		NYS															
		05 12 00	1.6 B.		Shop Drawings	Action		NYS															
		05 12 00	1.6 C		Material Data	Action		NYS															
		05 12 00	1.6 D.		Bolt Certification	Action		NYS															
92		05 40 00	1.3 A.		Qualification Data: forTesting Agency	Informational		NYS															
93		05 40 00	1.3 B.		Welding Certificates	Informational		NYS															
94		05 40 00	1.3 C.		Product Certificates	Informational																	
95		06 10 00	1.3 A.		Product Data	Action		NYS															
96		06 10 00	1.4 A.		Material Certificates	Informational		NYS															
97		06 41 00	1.4 A.		Product Data	Action		NYS															
98		06 41 00	1.4 B.		Shop Drawings	Action		NYS															
99		06 41 00	1.4 C.		Samples	Action		NYS															
100		06 41 00	1.5 A.		Test Reports	Informational		NYS															
101		06 41 00	1.5 B.		Certification Reports	Informational		NYS															

PROJECT No. 071099-00

Contractor Job #:

Project Name: Replace Storefront and Exterior Doors- Bartle Library, University Union and Couper Administration Building

Revised By:

DATE:

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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

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102		06 41 00	1.5 C.		Product Certificates	Informational		NYS															
103		06 41 00	1.5 D.		Field Quality Control Reports	Informational		NYS															
104		06 41 00	1.5 E.		Qualification Statements: Manufacturer & Installer.	Informational		NYS															
105		06 42 16	1.4 A.		Product Data	Action		NYS															
106		06 42 16	1.4 B.		Shop Drawings	Action		NYS															
107		06 42 16	1.4 C.		Samples	Action		NYS															
108		06 42 16	1.5 A.		Qualification Statements for Installer	Informational		NYS															
109		06 42 16	1.5 B.		Product Certificates	Informational		NYS															
110		06 42 16	1.5 C.		Quality Standard Compliance Certificates	Informational		NYS															
111		06 42 16	1.5 D.		Evaluation Reports	Informational		NYS															
112		07 14 13	1.4 A.		Product Data	Action		NYS															
113		07 14 13	1.4 B.		Shop Drawings	Action		NYS															
114		07 14 13	1.4 C.		Samples	Action		NYS															
115		07 14 13	1.5 A.		Qualification Statements for Installer	Informational		NYS															
116		07 14 13	1.5 B.		Field quality-control reports	Informational		NYS															
117		07 14 13	1.5 C.		Sample Warranties	Informational		NYS															
118		07 19 00	1.3 A.		Product Data	Action		NYS															
119		07 19 00	1.3 B.		Samples	Action		NYS															
120		07 19 00	1.4 A.		Qualification Statements for Applicator	Informational		NYS															
121		07 19 00	1.4 B.		Product Certificates	Informational		NYS															
122		07 19 00	1.4 C.		Sample Warranties	Informational		NYS															
123		07 21 00	1.2 A.		Product Data	Action		NYS															
124		07 21 00	1.3 A.		Installer's Certification	Informational		NYS															
125		07 21 00	1.3 B.		Product Test Reports	Informational		NYS															
126		07 21 00	1.3 C.		Research Reports	Informational		NYS															
127		07 42 13	1.4 A.		Product Data	Action		NYS															
128		07 42 13	1.4 B.		Shop Drawings	Action		NYS															
129		07 42 13	1.4 C.		Samples	Action		NYS															
130		07 42 13	1.5 A.		Product Test Reports	Informational		NYS															
131		07 42 13	1.5 B.		Qualification Statements	Informational		NYS															
132		07 42 13	1.5 C.		Sample Warranties	Informational		NYS															
133		07 42 13	1.6 A.		Maintenance Data	Closeout		NYS															
134		07 42 13	1.6 B.		Warranty Documentation	Closeout		NYS															
135		07 42 93	1.3 A.		Product Data	Action		NYS															
136		07 42 93	1.3 B.		Shop Drawings	Action		NYS															
137		07 42 93	1.3 C		Samples	Action		NYS															
138		07 42 93	1.4 A.		Qualification Statements	Informational		NYS															
139		07 42 93	1.4 B.		Product Test Reports	Informational		NYS															
140		07 42 93	1.4 C.		Sample Warranties	Informational		NYS															
141		07 42 93	1.5 A.		Maintenance Data	Closeout		NYS															
142		07 42 93	1.5 B.		Warranty Documentation	Closeout		NYS															
143		07 62 00	1.3 A.		Product Data	Action		NYS															
144		07 62 00	1.3 B.		Shop Drawings	Action		NYS															
145		07 62 00	1.4 A.		Certificates	Informational		NYS															
146		07 62 00	1.4 B.		Product Test Reports	Informational		NYS															
147		07 62 00	1.4 C.		Research Reports	Informational		NYS															
148		07 62 00	1.4 D.		Qualification Statements	Informational		NYS															
149		07 62 00	1.4 E.		Sample warranties	Informational		NYS															
150		07 62 00	1.5 A.		Maintenance Data	Closeout		NYS															
		07 72 73	1.4 A.		Product Data	Action		NYS															
152		07 72 73	1.4 B.		Shop Drawings	Action		NYS															
153		07 72 73	1.4 C.		Samples	Action		NYS															
154		07 72 73	1.5 A.		Qualification Data	Informational		NYS															
155		07 72 73	1.5 B.		Product Certificates	Informational		NYS															
156		07 72 73	1.5 C.		Product Test Reports	Informational		NYS															
157		07 72 73	1.5 D.		Field Quality-Control Reports	Informational		NYS															
158		07 72 73	1.5 E.		Sample Warranty	Informational		NYS															
159		07 84 13	1.3 A.		Product Data	Action		NYS															
160		07 84 13	1.3 B.		Product Schedule	Action		NYS															
161		07 84 13	1.3 C.		Unlisted Firestopping Systems (if any)	Action		NYS															
162		07 84 13	1.4 A.		Qualification Data	Informational		NYS															
163		07 84 13	1.4 B.		System Designs	Informational		NYS															

PROJECT No. 071099-00

Contractor Job #:

Project Name: Replace Storefront and Exterior Doors- Bartle Library, University Union and Couper Administration Building

Revised By:

DATE:

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164		07 84 13	1.5 A.		Installer Certificates	Closeout		NYS															
165		07 84 43	1.3 A.		Product Data	Action		NYS															
166		07 84 43	1.3 B.		Unlisted Firestopping Systems (if any)	Action		NYS															
167		07 84 43	1.3 C.		Product Schedule	Action		NYS															
168		07 84 43	1.4 A.		Qualification Data	Informational		NYS															
169		07 84 43	1.4 B.		System Designs	Informational		NYS															
170		07 84 43	1.5 A.		Installer Certificates	Closeout		NYS															
171		07 92 00	1.3 A.		Product Data	Action		NYS															
172		07 92 00	1.3 B.		Samples	Action		NYS															
173		07 92 00	1.3 C.		Schedule	Action		NYS															
174		07 92 00	1.4 A.		Qualification Data	Informational		NYS															
175		07 92 00	1.4 B.		Product Test Reports	Informational		NYS															
176		07 92 00	1.4 C.		Field-Adhesion-Test Reports	Informational		NYS															
177		07 92 00	1.4 D.		Sample Warranties	Informational		NYS															
178		08 11 13	1.5 A.		Product Data	Action		NYS															
179		08 11 13	1.5 B.		Shop Drawings	Action		NYS															
180		08 11 13	1.5 C.		Product Schedule	Action		NYS															
181		08 11 13	1.6 A.		Qualification Data	Informational		NYS															
182		08 11 13	1.6 B.		Product Test Reports	Informational		NYS															
183		08 11 13	1.6 C.		Field Quality-Control Reports	Informational		NYS															
184		08 11 13	11.7 A.		Record Documents	Closeout		NYS															
185		08 11 16	1.3 A.		Product Data	Action		NYS															
186		08 11 16	1.3 B.		Shop Drawings	Action		NYS															
187		08 11 16	1.3 C.		Samples	Action		NYS															
188		08 11 16	1.3 D.		Product Schedule	Action		NYS															
189		08 11 16	1.4 A.		Maintenance Data	Closeout		NYS															
190		08 31 13	1.2 A.		Product Data	Action		NYS															
191		08 31 13	1.2 B.		Product Schedule	Action		NYS															
192		08 31 13	1.3 A.		Field Quality-Control Reports	Informational		NYS															
193		08 31 13	1.3 B.		Qualification Statements	Informational		NYS															
194		08 31 13	1.4 A.		Record Documents	Closeout		NYS															
195		08 41 13	1.3 A.		Product Data	Action		NYS															
196		08 41 13	1.3 B.		Shop Drawings	Action		NYS															
197		08 41 13	1.3 C.		Samples	Action		NYS															
198		08 41 13	1.3 E.		Entrance Door Hardware Schedule	Action		NYS															
199		08 41 13	1.3 F.		Delegated Design Submittals	Action		NYS															
200		08 41 13	1.4 A.		Energy Performance Certificates	Informational		NYS															
201		08 41 13	1.4 B.		Product Test Reports	Informational		NYS															
202		08 41 13	1.4 C.		Qualification Statements	Informational		NYS															
203		08 41 13	1.4 D.		Delegated Design Engineer Qualifications	Informational		NYS															
204		08 41 13	1.4 E.		Sample Warranties	Informational		NYS															
205		08 41 13	1.5 A.		Operation and Maintenance Data	Closeout		NYS															
206		08 44 13	1.3 A.		Product Data	Action		NYS															
207		08 44 13	1.3 B.		Shop Drawings	Action		NYS															
208		08 44 13	1.3 C.		Samples	Action		NYS															
209		08 44 13	1.3 D.		Delegated Design Submittals	Action		NYS															
210		08 44 13	1.4 A.		Qualification Data	Informational		NYS															
211		08 44 13	1.4 B.		Energy Performance Certificates	Informational		NYS															
212		08 44 13	1.4 C.		Product Test Reports	Informational		NYS															
213		08 44 13	1.4 D.		Quality-Control Program	Informational		NYS															
214		08 44 13	1.4 E.		Source Quality-Control Reports	Informational		NYS															
215		08 44 13	1.4 F.		Field Quality-Control Reports	Informational		NYS															
216		08 44 13	1.4 G.		Sample Warranties	Informational		NYS															
217		08 44 13	1.5 A.		Maintenance Data	Closeout		NYS															
218		08 71 00	1.4 A.		Product Data	Action		NYS															
219		08 71 00	1.4 B.		Shop Drawings	Action		NYS															
220		08 71 00	1.4 C.		Samples	Action		NYS															
221		08 71 00	1.4 D.		Door Hardware Schedule	Action		NYS															
222		08 71 00	1.4 E.		Keying Schedule	Informational		NYS															
223		08 71 00	1.5 A.		Qualification Data	Informational		NYS															
224		08 71 00	1.5 B.		Product Test Reports	Informational		NYS															
225		08 71 00	1.5 C.		Sample Warranty	Informational		NYS															

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226		08 71 00	1.6 A.		Maintenance Data	Closeout		NYS															
227		08 71 00	1.6 B.		Final Schedules	Closeout		NYS															
228		08 80 00	1.4 A.		Product Data	Action		NYS															
229		08 80 00	1.4 B.		Samples	Action		NYS															
230		08 80 00	1.4 C.		Glazing Schedule	Action		NYS															
231		08 80 00	1.4 D.		Delegated Design Submittal	Action		NYS															
232		08 80 00	1.5 A.		Qualification Data	Informational		NYS															
233		08 80 00	1.5 B.		Product Certificates	Informational		NYS															
234		08 80 00	1.5 C.		Product Test Reports	Informational		NYS															
235		08 80 00	1.5 D.		Sample Warranties	Informational		NYS															
236		09 22 16	1.3 A.		Product Data	Action		NYS															
237		09 22 16	1.3 B.		Shop Drawings	Action		NYS															
238		09 22 16	1.4 A.		Product Certificates	Informational		NYS															
239		09 23 00	1.3		Product Data	Action		NYS															
240		09 29 00	1.2 A.		Product Data	Action		NYS															
241		09 29 00	1.2 B.		Samples	Action		NYS															
242		09 51 13	1.3 A.		Product Data	Action		NYS															
243		09 51 13	1.3 B.		Samples	Action		NYS															
244		09 51 13	1.4 A.		Coordination Drawings	Informational		NYS															
245		09 51 13	1.4 B.		Qualification Data	Informational		NYS															
246		09 51 13	1.4 C.		Product Test Reports	Informational		NYS															
247		09 51 13	1.5 A.		Maintenance Data	Closeout		NYS															
248		09 63 40	1.3 A.		Product Data	Action		NYS															
249		09 63 40	1.3 B.		Shop Drawings	Action		NYS															
250		09 63 40	1.3 C.		Samples	Action		NYS															
251		09 63 40	1.4 A.		Qualification Data	Informational		NYS															
252		09 63 40	1.4 B.		Material Test Reports	Informational		NYS															
253		09 63 40	1.5 A.		Maintenance Data	Closeout		NYS															
254		09 65 13	1.3 A.		Product Data	Action		NYS															
255		09 65 13	1.3 B.		Samples	Action		NYS															
256		09 65 13	1.3 C.		Schedule	Action		NYS															
257		09 65 19	1.3 A.		Product Data	Action		NYS															
258		09 65 19	1.3 B.		Samples	Action		NYS															
259		09 65 19	1.4 A.		Qualification Data	Informational		NYS															
260		09 65 19	1.5 A.		Maintenance Data	Closeout		NYS															
261		09 66 13	1.4 A.		Product Data	Action		NYS															
262		09 66 13	1.4 B.		Shop Drawings	Action		NYS															
263		09 66 13	1.4 C.		Samples	Action		NYS															
264		09 66 13	1.5 A.		Qualification Data	Informational		NYS															
265		09 66 13	1.6 A.		Maintenance Data	Closeout		NYS															
266		09 91 13	1.2 A.		Product Data	Action		NYS															
267		09 91 13	1.2 B.		Samples	Action		NYS															
268		09 91 23	1.2 A.		Product Data	Action		NYS															
269		09 91 23	1.2 B.		Samples	Action		NYS															
270		12 24 13	1.2 A.		Product Data	Action		NYS															
271		12 24 13	1.2 B.		Shop Drawings	Action		NYS															
272		12 24 13	1.2 C.		Samples	Action		NYS															
273		12 24 13	1.2 D.		Schedule	Action		NYS															
274		12 24 13	1.3 A.		Qualification Statements	Informational		NYS															
275		12 24 13	1.4 A.		Operation and Maintenance Data	Closeout		NYS															
276		12 36 23	1.2 A.		Product Data	Action		NYS															
277		12 36 23	1.2 B.		Shop Drawings	Action		NYS															
278		12 36 23	1.2 C.		Samples	Action		NYS															
279		12 36 23	1.3 A.		Coordination Drawings	Informational		NYS															
280		12 36 23	1.3 B.		Product Certificates	Informational		NYS															
281		12 48 13	1.3 A.		Product Data	Action		NYS															
282		12 48 13	1.3 B.		Shop Drawings	Action		NYS															

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283		12 48 13	1.3 C.		Samples	Action		NYS															
284		12 48 13	1.4 A.		Maintenance grids	Closeout		NYS															
307																							
308		21 10 00			Product Data	Action																	
309		21 10 00			Coordination Drawings	Informational																	
310		21 10 00			Qualification Data	Informational																	
311		21 10 00			Welding Certificates	Informational																	
312		21 10 00			Field Test Reports	Informational																	
313		21 10 00			Field Quality-Control Reports	Informational																	
314																							
315		22 11 16			Product Data	Action	SD																
316		22 11 16			System Purging	Informational	TEST																
317		22 13 16			Product Data	Action	SD																
318		22 13 16			Field Quality-Control Report	Informational	TEST																
319		22 42 00			Product Data	Action	SD																
		22 42 00			Coordination Drawings	Informational	CERT																
285		22 42 00			Operation and Maintenance Data	Action	OMM	NYS															
286								NYS															
287		23 05 00			Product Data	Action	SD	NYS															
288		23 05 00			Product Certificates	Informational	CERT	NYS															
		23 05 00			Welding Certificates	Informational	CERT																
289		23 05 00			Field Quality Control Reports	Informational	TEST	NYS															
290		23 05 00			Operation and Maintannace Data	Action	OMM	NYS															
291		23 05 23			Product Data	Action	SD	NYS															
292		23 05 53			Prodcut Data	Action	SD	NYS															
293		23 05 53			Samples	Action	SAM	NYS															
		23 05 53			Equipment-Label Schedue	Action	OTH																
294		23 07 19			Product Data	Action	SD	NYS															
295		23 07 19			Shop Drawings	Action	SD	NYS															
296		23 07 19			Qualification Data	Informational	CERT	NYS															
297		23 21 13			Product Data	Action	SD	NYS															
298		23 82 39.13			Product Data	Action	SD	NYS															
		23 82 39.13			Shop Drawings	Action	SD																
299		23 82 39.13			Field Quality Control Reports	Informational	TEST	NYS															
300		23 82 39.13			Operation and Maintenance Data	Action	OMM	NYS															
301								NYS															
302		26 05 19			Product Schedule	Action	SD	NYS															
303		26 05 19			Product Data	Action	SD	NYS															
304		26 05 19			Field Quality-Control Reports	Action	TEST	NYS															
		26 05 19			Manufacturers Published Instructions	Informational	CERT																
305		26 05 19			Field Reports	Informational	TEST	NYS															
306		26 05 26			Product Data	Action	SD																
307		26 05 26			Shop Drawings	Action	SD																
308		26 05 26			Field Quality-Control Reports	Action	TEST																
309		26 05 26			Manufacturers Published Instructions	Informational	TEST																
310		26 05 29			Product Data	Action	SD																
311		26 05 29			Shop Drawings	Action	SD																
312		26 05 29			Delegated Design Submittals	Action	TEST																
313		26 05 29			Welding Certificates	Informational	CERT																
314		26 05 33.13			Product Data	Action	SD																
315		26 05 33.13			Sustainable Design - Product Data	Action	SD																
316		26 05 33.13			Field Quality-Control Reports	Action	TEST																
317		26 05 33.13			Manufacturers Published Instructions	Informational	CERT																
318		26 05 33.16			Product Data	Action	SD																
319		26 05 33.16			Samples	Action	SAM																
320		26 05 33.16			Shop Drawings	Action	SD																
321		26 05 33.16			Sustainable Design - Product Data	Action	SD																
322		26 05 33.16			Manufacturers Published Instructions	Informational	CERT																
323		26 05 33.23			Product Data	Action	SD																

SUNY State University Construction Fund

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): _____

#	*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.***	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)?	☐	☐	☐
2	**Temporary Enclosures** {4.3.1}: Are all panels, tarps, plastic sheeting, etc. flame retardant?	☐	☐	☐
3	**Impairments** {IFC Section 1003}:			
	☐ Have paths of egress from occupied areas been maintained? {IFC Section 1003}:	☐	☐	☐
	☐ 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}	☐	☐	☐
4	**Fire Extinguishers** {4.3.4}:			
	☐ Are appropriate fire extinguishers readily available, with a maximum travel distance of 50 feet?	☐	☐	☐
	☐ Have fire extinguishers been provided within temporary enclosures?	☐	☐	☐
5	**Internal Combustion Devices** {4.4}:			
	☐ Are all internal combustion devices, where required, exhausted outside, with a least 9 inches between exhaust and combustible materials?	☐	☐	☐
	☐ Is refueling only done on cool engines?	☐	☐	☐
6	**Temporary Heating** {5.2}: Is temporary heating equipment listed and being used according to the manufacturer's requirements?	☐	☐	☐
7	**Hot Work Programs** {5.1}:			
	☐ Is there a current permit for ongoing operations?	☐	☐	☐
	☐ Are all precautions required by the permit in place?	☐	☐	☐
	☐ Is there a dedicated fire watch?	☐	☐	☐
	☐ Does the fire watch extend after the completion for work (e.g., usually minimum of 30 min. in general or 2 hrs for roofs)?	☐	☐	☐
8	**Waste** {5.4}: Are accumulations of waste materials, dust, and debris removed at the end of each shift (or more frequently as needed)?	☐	☐	☐
	☐ Are materials subject to spontaneous ignition (e.g., oily rags) stored in listed disposal containers?	☐	☐	☐
9	**Trash Chutes** {5.4}: Are trash chutes non-combustible, or provided with sprinkler protection?	☐	☐	☐
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?	☐	☐	☐
11	**Compressed Gases** { IFC Chapter 53}: Are compressed gases properly stored and being used?	☐	☐	☐

SUCF Project No. _____

#	*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}:			
	☐ Are extension cords rated and free from damage?	☐	☐	☐
	☐ Do all branch circuits originate in approved power outlets or panel boards with over-current protection?	☐	☐	☐
	☐ Are all circuits grounded?	☐	☐	☐
13	**Lighting** {6.1.3}:			
	☐ Do all temporary lights have guards?	☐	☐	☐
	☐ Are lights only suspended by their cords when designated to be so suspended?	☐	☐	☐
	☐ Are they fastened securely, if necessary, to prevent ignition of combustible materials?	☐	☐	☐
14	**Fire Safety Plan** {7.1}: Has a fire safety plan been established and has a Fire Prevention Program Superintendent been designated?	☐	☐	☐
15	**Fire Alarms {7.4}:**			
	☐ Is there a readily available pull box for fire alarms?	☐	☐	☐
	☐ If a telephone is used, are instructions clearly posted?	☐	☐	☐
16	**Command Post/Evac Area {7.5}**			
	☐ Is there a designated command post provided with plans, emergency info., keys, communication, and other equipment as needed?	☐	☐	☐
	☐ Is there a clear post-evacuation muster location?	☐	☐	☐
17	**Fire Access** {7.5}:			
	☐ Are pre-approved fire department access routes being maintained?	☐	☐	☐
	☐ Is there clear access to hydrants, standpipe and fire department connections?	☐	☐	☐
18	**Standpipes** {7.6, 8.7.4}: Are standpipes ready for use, and remain within one floor of the top level during construction/demolition?	☐	☐	☐
19	**Egress** {7.8}: Is the means of egress acceptable (e.g. properly marked, clear, safe, lighted)?	☐	☐	☐
20	**Sprinkler** {8.7.3}:			
	☐ Is the sprinkler in place as son as practicable following construction?	☐	☐	☐
	☐ Are sprinkler valves checked at the end of each shift?	☐	☐	☐
21	**Fire Cutoffs** {8.6.1}:			
	☐ Are fire walls and exit stairwells, where required for the completed building, given construction priority for installation?	☐	☐	☐
	☐ Are fire doors installed as soon as practicable?	☐	☐	☐
22	**Stairs** {7.5.6}: Is a stairwell provided for the building?	☐	☐	☐
	☐ Is the stairwell extended upward as each floor is installed in new construction and maintained for each floor still remaining in demolotion?	☐	☐	☐
	☐ Is it lighted?	☐	☐	☐
	☐ Is it enclosed when the building exterior walls are in place?	☐	☐	☐
	☐ Is signage provided indicating floor level, stair designation, and exit path directions?	☐	☐	☐
	☐ Are extinguishers provided at each floor?	☐	☐	☐
23	**Impairments to fire protection systems or fire alarm, detection or communication systems {7.2.4.6}:**			
	☐ 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?	☐	☐	☐
	☐ Is there an impairment coordinator?	☐	☐	☐
	Number of Violations:			

SUCF Project No.

Notes:

Completed Report Submission Information:

Distribution: Contractor, Campus, CEO, Project File

Submitted to: Submission Date:

Reviewer: Date of Review:

SECTION 014533 - SPECIAL INSPECTIONS AND STRUCTURAL TESTING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Special Inspections and Structural Testing shall be in accordance with Chapter 17 of the *Building Code of New York State* (BCNYS).

1.2 DEFINITIONS

A. Approved Agency: An established and recognized agency engaged by the Owner or the Owner's authorized agent to perform testing and inspections. The Approved Agency shall be regularly engaged in conducting tests, providing inspection services, and providing product certifications. The Approved Agency shall have equipment and personnel to conduct and evaluate tests and conduct Special Inspections on behalf of the Owner.

B. Registered Design Professional in Responsible Charge (RDPRC): Professional Engineer or Registered Architect licensed in New York State, engaged by the Owner or the Owner's authorized agent to review, coordinate, and implement the Special Inspection program. The RDPRC may or may not be employed by the Approved Agency and may not be the Project SEOR.

C. Special Inspector: A qualified person employed or retained by the Approved Agency, approved by the Code Enforcement Official as having the qualifications required to perform inspections.

D. Structural Engineer of Record (SEOR): Registered Design Professional Engineer whose seal appears on the Contract Documents and is responsible for the preparation of the Schedule of Special Inspections.

E. Code Enforcement Official: Officer or other designated authority charged with administration and enforcement of the BCNYS. For projects under jurisdiction of New York State agencies such as the Department of Education (SED), State University Construction Fund (SUCF), Office of General Services (OGS), and Dormitory Authority (DASNY), the Code Enforcement Official is an official from agency having jurisdiction.

F. SUCF Statement of Special Inspections: Documents prepared by the SEOR and filed with and approved by the Code Enforcement Official, listing materials and work requiring Special Inspections. The Statement of Special Inspections is represented by this specification and includes the Schedule of Special Inspections.

G. SUCF Schedule of Special Inspections: An itemized list of inspections, verifications, and tests (including frequency) required for the project, and the minimum qualifications of the Special Inspectors who will perform these services. The SUCF Schedule of Special Inspections is provided at the end of this section.

H. Inspect and Inspection: Visual observation of materials, equipment, or construction work as defined in the Statement of Special Inspections, to determine that the work is in substantial conformance with the requirements of the Contract Documents.

I. Continuous Special Inspection: Full-time observation of work by the Special Inspector while the work is being performed.

J. Periodic Special Inspections: Part-time or intermittent observation of work by the Special Inspector for work that has been or is being performed and at completion of work.

1.3 QUALIFICATIONS

A. The Approved Agency, RDPRC, and Special Inspectors shall be accepted by the Owner and the Code Enforcement Official.

B. Special Inspections shall be performed by personnel who have relevant experience for each category of inspections indicated herein.

C. Required minimum qualifications of Special Inspectors are indicated in the SUCF Statement of Special Inspection.

1.4 SUBMITTALS

A. The Approved Agency shall submit to the RDPRC and Code Enforcement Official for review, a copy of their qualifications including names and qualifications of the RDPRC and each Special Inspector who will be performing inspections or tests.

B. The Approved Agency shall disclose past or current business relationships or potential conflicts of interest with Contractor or Subcontractors whose work will be inspected or tested.

1.5 PAYMENT

A. Owner will engage and pay for services of the RDPRC, Approved Agency, and the Special Inspectors.

B. If materials requiring Special Inspections are fabricated in a plant not within 200 miles of project site, Contractor shall be responsible for travel expenses of Special Inspectors.

C. Contractor shall be responsible for cost of retesting or reinspection of work failing to comply with requirements of Contract Documents.

1.6 OWNER RESPONSIBILITIES

A. Owner will provide the RDPRC and Approved Agency with complete set of Contract Documents sealed by the SEOR and approved by the Code Enforcement Official.

1.7 CONTRACTOR RESPONSIBILITIES

A. Contractor shall cooperate with the RDPRC, Approved Agency, and the Special Inspectors, so Special Inspections and testing may be performed without hindrance.

B. As indicated in the Schedule of Special Inspections, Contractor shall notify the RDPRC and Approved Agency at least 48 hours in advance of a required inspection or test.

C. Contractor shall provide incidental labor and facilities to provide access to work to be inspected or tested, to obtain and handle samples at site or at source of products to be tested, to facilitate tests and inspections, and for storing and curing of test samples.

D. If Special Inspections or testing require the use of Contractor's scaffolding to access work areas, Contractor shall provide competent person to perform daily evaluation of scaffolding to verify it is safe to use. Contractor shall notify Special Inspectors of this review before each use. Contractor is responsible for safe assembly and stability of scaffolding.

E. Contractor shall keep latest set of Construction Drawings, field sketches, accepted shop drawings, and specifications at project site for field use by Special Inspectors.

F. Contractor shall perform remedial work if required and sign nonconformance reports stating remedial work has been completed. Contractor shall submit signed reports to the Approved Agency and RDPRC as work proceeds.

G. The Special Inspection program shall not relieve Contractor of obligation to perform work in accordance with requirements of Contract Documents or from implementing an effective Quality Control program.

H. Contractor shall be solely responsible for construction site safety.

1.8 SPECIAL INSPECTOR RESPONSIBILITIES

A. The RDPRC shall hold a Special Inspections preconstruction meeting at least 7 days prior to initial planned date for start of construction. Attendees shall include Contractors, Approved Agency, SEOR, and Project Architect. Discussions shall include the following:

1. Review of specifications and Schedule of Special Inspections for work requiring Special Inspections.
2. Responsibilities of the RDPRC, Contractors, Owner, Approved Agency, Special Inspectors, and SEOR.
3. Notification and reporting procedures.

B. RDPRC shall record and distribute minutes from the Special Inspection Preconstruction meeting.

C. RDPRC shall review inspection and material testing reports and coordinate the services of the Approved Agency as follows:

1. Verify inspections have been performed in accordance with the Schedule of Special Inspections.

2. Verify reports are being distributed to the Contractor, Owner, Architect, Code Enforcement Official, and SEOR.
3. Verify discrepancies have been recorded and are being tracked.

D. Special Inspectors shall make site visits to inspect work as designated in the Statement of Special Inspections. Discrepancies will be brought to the attention of the Contractor, RDPRC and SEOR.

E. RDPRC shall keep records of inspections and tests.

F. RDPRC shall review Certificates of Compliance for conformance with the standards specified in the Contract Documents. Discrepancies will be brought to the attention of the Contractor and SEOR.

G. Special Inspector shall submit the SUCF Special Inspector's Final Report Form.

1.9 LIMITS ON AUTHORITY

A. RDPRC and Approved Agency shall not:

1. Release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Have control over Contractor's means and methods of construction.
3. Be responsible for construction site safety.
4. Have authority to stop work.

1.10 RECORDS AND REPORTS

A. Prepare detailed reports of each test or inspection. Include the following general information:

1. Project name and number.
2. Date of test or inspection.
3. Name of RDPRC and Approved Agency.
4. Name of Special Inspector.
5. Weather conditions.
6. Locations and elevations of specific areas tested or inspected referenced to grid lines.
7. Description of test or inspection.
8. Reference to applicable ASTM standard.
9. Summary of observations, results, and recommendations.
10. Description of areas or materials requiring retesting or reinspection.

B. Concrete compressive strength test reports shall contain the following information:

1. Name of Contractor and concrete supplier.
2. Name of concrete testing service.
3. Name of Special Inspector making and testing specimens.
4. Truck number and delivery ticket number.
5. Date and location within structure of concrete placement.
6. Concrete type, class, mix proportions of materials, and design compressive strength at 28 days.

7. Slump, air content, unit weight, and concrete temperature.
8. Total time period between batching and completing placement for each truck.
9. Compressive strength and type of break for tests.

C. Field reports for concrete inspection shall contain general information noted above plus ambient temperature and cylinder numbers.

1.11 COMMUNICATION

A. Special Inspector shall immediately notify Contractor, RDPRC, Approved Agency, and SEOR by telephone, fax, or e-mail of test results failing to comply with requirements of Contract Documents.

B. Special Inspector shall immediately notify Contractor of work found to be in nonconformance with Contract Documents during inspections. If nonconforming work is not corrected while Special Inspector is on-site, Special Inspector shall notify RDPRC, Approved Agency, and SEOR within 24 hours (one business day) and issue an inspection report noting the non-conformance.

C. Approved Agency shall use a log to record and track non-conforming work during construction. Non-Conformance log shall include the following information:

1. Description of non-conformance.
2. Date of non-conformance.
3. Description of SEOR response if received.
4. Status of nonconformance: ‘Open’ or ‘Closed.’

Updated log shall be submitted to the RDPRC, SEOR, and Architect on a weekly basis. Approved Agency may use Non-Conformance Log form provided at end of this section or other similar form.

D. If non-conforming work is not corrected at time of substantial completion of structure or other appropriate time, RDPRC shall notify Code Enforcement Official.

1.12 DISTRIBUTION OF REPORTS

A. Approved Agency shall submit reports to RDPRC and SEOR within 7 days of inspection or test. Legible handwritten reports may be submitted if final typed copies are not available.

B. RDPRC shall distribute reports to the Contractor, Owner, Architect, Code Enforcement Official, and SEOR within 7 days of inspections. Legible handwritten reports may be submitted if final typed copies are not available.

C. If requested by the Code Enforcement Official, Approved Agency and RDPRC shall submit interim reports that include inspections and tests performed since beginning of construction or since previous interim report. Interim reports shall be addressed to the Code Enforcement Official with copies sent to the SEOR, Architect, and Contractor. Interim reports shall be signed by Special Inspector performing inspections.

1.13 FINAL REPORT OF SPECIAL INSPECTIONS

A. At completion of work, each Approved Agency shall submit Agent's Final Report of Special Inspections to RDPRC stating work was completed in substantial conformance with Contract Documents and appropriate inspections and tests were performed. Approved Agency may use Agent's Final Report of Special Inspections form provided at end of this section or other similar form.

B. At completion of work, each Approved Agency shall submit Agent's Final Report of Special Inspections to RDPRC stating work was completed in substantial conformance with Contract Documents and appropriate inspections and tests were performed. Approved Agency shall use SUCF Agent's Final Report of Special Inspections form.

C. At completion of work, RDPRC shall compile a Final Report of Special Inspections including each Agent's Final Report of Special Inspections. The Final Report of Special Inspections shall state required inspections have been performed and itemize nonconforming work not corrected or resolved as required by the BCNYS. Interim reports from all Special Inspectors will not be included unless specifically requested by the Owner or Code Enforcement Official. The Final Report shall be stamped by the RDPRC.

D. RDPRC shall use SUCF Final Report of Special Inspections form.

E. RDPRC shall submit Final Report of Special Inspections to SEOR and Code Enforcement Official prior to issuance of a Certificate of Use and Occupancy.

APPROVED AGENCY NON-CONFORMANCE LOG

PROJECT: Binghamton University Storefront Replacements

PROJECT NUMBER:

Non-Conformance Item No. (See Note 1)	**Special Inspection Report No. Reference/Date**	**Summary of Non-Conformance**	**Date SEOR Response Received**	**Reinspection Required**	**Date Contractor Verification Received** (See Note 1)	**Status** (See Note 2)
NC 1						
NC 2						
NC 3						
NC 4						
NC 5						
NC 6						

1. New items are in **bold**. For each non-conformance item above, the General Contractor or Subcontractor must sign and submit the Contractor Verification statement located in the RDP Response Report.

2. Non-conformance items remain " OPEN" until the Contractor Verification have been received. When the signed verifications have been received by the RDP, the item will be " CLOSED" .

Approved Agency's Final Report of Special Inspections

Project Name: Replace Storefront and Exterior Doors-Bartle Library, University Union, and Couper Administration Building
Approved Agency: _____
Location: Binghamton University
Approved Agency Project No.: _____
Owner: Binghamton University
Special Inspector: _____
Owner Address: 4400 Vestal Parkway East
SEOR: Ryan Biggs Clark Davis Engineering, DPC
Ryan Biggs Clark Davis Project No.: 15015

To the best of my information, knowledge, and belief, the Special Inspections and testing required for this project and designated in the Statement of Special Inspections (which includes Specification Section 014533 and the Schedule of Special Inspections) have been performed and discovered discrepancies have been reported and resolved except for the following:

Comments:

[Attach continuation sheets if required to complete description of uncorrected discrepancies.]

Respectfully submitted,
Agent of the Approved Agency

_____
(Type or print name)

_____
Signature Date

_____
Address

_____
City, State, Zip

Final Report of Special Inspections

Project Name: Replace Storefront and Exterior Doors-Bartle Library, University Union, and Couper Administration Building
Approved Agency: _____
Location: Binghamton University
Approved Agency Project No.: _____
Owner: Binghamton University
Special Inspector: _____
Owner Address: 4400 Vestal Parkway East
SEOR: Ryan Biggs Clark Davis Engineering, DPC
Ryan Biggs Clark Davis Project No.: 15015

To the best of my information, knowledge, and belief, Special Inspections required for this project, as indicated in the Statement of Special Inspections, (which includes Specification Section 014533 and the Schedule of Special Inspections) have been performed and discovered discrepancies have been reported and resolved except for the following:

Comments:

[Attach continuation sheets if required to complete description of uncorrected discrepancies.]

Interim reports submitted prior to this Final Report form a basis for and are to be considered an integral part of this Final Report. Upon request, the interim Testing and Special Inspection reports can be provided. Agent's Final Reports of Special Inspections are attached and are also a part of this Final Report.

Respectfully submitted,
Registered Design Professional in Responsible Charge

_____
(Type or print name)

_____
Signature Date

Professional Seal

END OF SECTION 014533 (03/22)

Statement of Special Inspections

SUCF Project No.: 071099-00 Project Title: Replace Storefront and Exterior Doors- Bartle Library, University Union and Couper Administration Building

Building Name: Bartle Library Occupancies: _____ Risk Category: _____

Registered Design Professionals in Responsible Charge (RDPRC):

	(Name)	(Address)
Architect:	Quinlivan, Pierik & Krause A/E DBA QPK Design	450 South Salina Street, 5th Flr Syracuse, NY 13202
Structural Engineer:	Ryan Biggs Clark Davis	1326 New Seneca Turnpike, Skaneateles, NY 13152
Mechanical Engineer:		

- Identification of Seismic-Force Resistance Systems and Wind-Force Resisting systems
- Required Special Inspections, Tests and Observations
- 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 2025 Uniform Fire Prevention and Building Code.

In addition to the inspections required in 2025 BCNYS sections 110 and 1705, I/we shall perform structural observations as required per 1704.6, and noted in this Statement of Special Inspections.



(Affix professional seal)



(Affix professional seal)

(Affix professional seal)

Structural Engineer

Christopher Latreille May 18, 2026
(Print name / date)

(Signature)

Architect

Andrew Wright (May 18, 2026)
(Print name / date)

(Signature)

Mechanical Engineer

(Print name / date)

(Signature)

-> Seismic-Force-Resisting Systems: The Seismic Design Category (SDC) is A

There ☐ are ☒ are not, seismic-force-resisting systems in this project.

There ☐ are ☒ are not, designated seismic systems.

-> Wind-Force-Resisting Systems:

- ☐ Wind Exposure Category B, basic design wind speed (V) 150 mph or greater.
- ☐ Wind Exposure Category C or D, basic design wind speed (V) 140 mph or greater.
- ☐ Windborne Debris Region (1609.2)
- ☐ Special Wind Region (1609.3 Figures)
- ☐ Tornado Loads (1609.5)
- ☐ Elevators, Escalators, and conveying Systems (1609.7)

Materials, systems, and work required to have special inspections, tests or observation

Check all below that is included in the project and has required special inspections testing and/or structural observations per Chapter 17: Identify documentation drawing location/s:

- ☐ Special Cases:
- ☒ Steel Construction: Drawing S-002
- ☒ Concrete Construction: Drawing S-002
- ☐ Masonry Construction:
- ☐ Wood Construction:
- ☐ Soils:
- ☐ Driven deep foundations:
- ☐ Cast-in-place deep foundations:
- ☐ Helical pile foundations:
- ☐ Structural Integrity of deep foundation elements:
- ☐ Fabricated items:
- ☐ Wind Requirements:
- ☐ Seismic Requirements:
- ☐ Sprayed fire-resistant materials:
- ☐ Mastic and intumescent fire-resistant coatings:
- ☐ Exterior insulation and finish systems:
- ☐ Fire-resistant penetrations and joints:
- ☐ Smoke control systems:
- ☐ Sealing of mass timber:
- ☐ Fabricated assemblies:
- ☐ Structural Observations:
- ☐ Documentation reporting requirements:
- ☐ Other:

	Category		Special Inspector Minimum Qualifications
[X]	Reinforced Concrete	[ ]	Current ICC Reinforced Concrete Special Inspector or ACI Concrete Constr. Inspector
		[ ]	Concrete field testing by an ACI Concrete Field Testing Technical w/ Grade 1 cert.
		[ ]	Intern Engineer with relevant experience
		[ ]	NYS Registered Design Professional Engineer (RDP) with relevant experience
[ ]	Pre-Stressed Concrete		Pretension Tendons
		[ ]	Current ICC Reinforced Concrete certification and ACI Concrete Field Testing Technician with Grade 1 certification plus one year relevant experience
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
			Post-Tension Tendons
		[ ]	Current Post-Tensioning Institute (PTI) certification
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
[X]	Welding	[ ]	Current AWS Certified Welding Inspector
		[ ]	Current ICC Structural Steel and Welding Certificate plus one year of relevant experience
		[ ]	Current Level II cert. from American Society for Non-Destructive Testing (NDT)
		[ ]	Current NDT Level III provided previously certified as NDT Level II
[X]	High-Strength Bolting & Steel Frame Inspection	[ ]	Current ICC Structural Steel and Welding certification and one year of relevant experience
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
[ ]	Masonry	[ ]	Current ICC Structural Masonry certification and one year of relevant experience
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
[ ]	Sprayed Fire-Resistant Materials	[ ]	Current ICC Spray-Applied Fireproofing certification and one year of relevant experience
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
[ ]	Excavation and filling; verification of soils; piling & drilled piers; modular retaining walls	[ ]	Current Level II certification in geotechnical engineering technology/construction from the National Institute for Certification in Engineering Technologies (NICET)
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
[ ]	Inspection of Fabricators	[ ]	Precast: Current ICC Reinforced Concrete certification plus one year relevant experience
		[ ]	Bar Joist: see welding requirements
		[ ]	Metal Building: see welding requirements
		[ ]	Structural Steel: see welding requirements
[ ]	Seismic Items not addressed elsewhere	[ ]	Qualified person with one year of relevant experience
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
[ ]	Exterior Insulation and Finish System	[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
[ ]	Smoke Control	[ ]	Expertise in fire protection engineering, mechanical engineering and certified as an air balancer
		[ ]	The RDP responsible for design
[ ]	Fire-Resistant Penetrations & Joints, Special Cases	[ ]	Qualified person with one year of relevant experience
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
[ ]	Mass Timber Sealants	[ ]	Qualified person with one year of relevant experience
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience

Contractor's Statement of Responsibility Form

SUCF Project No.: 071099-00 **Project Title:** Replace Storefront and Exterior Doors- Bartle Library, University Union and Couper Administration Building

Building Name: Bartle Library

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.: 071099-00 **Project Title:** Replace Storefront and Exterior Doors- Bartle Library, University Union and Couper Administration Building

Building Name: Bartle Library **Fabricated Assembly(ies)** _____

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, an approved 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.
- Submit a "Certificate of Compliance" at fabrication completion.

Company that conducted the Audit:

Date of Last Audit: _____ **Name:** _____

Contact Person: _____ **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: _____ **Certificate 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 to RDPRC

SUCF Project No.: 071099-00

Project Title: Replace Storefront and Exterior Doors- Bartle Library, University Union and Couper Administration Building

Contractor: _____

Special Inspector / Approved Agency: _____

We have completed the tasked 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 and the Building Official.

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)	(Company Name)
(Print Name)	(Print Title)

Statement of Special Inspections

SUCF Project No.: 071099-00 Project Title: Replace Storefront and Exterior Doors- Bartle Library, University Union and Couper Administration Building

Building Name: Couper Administration Building Occupancies: _____ Risk Category: _____

Registered Design Professionals in Responsible Charge (RDPRC):

	(Name)	(Address)
Architect:	Quinlivan, Pierik & Krause A/E DBA QPK Design	450 South Salina Street, 5th Flr Syracuse, NY 13202
Structural Engineer:	Ryan Biggs Clark Davis	1326 New Seneca Turnpike, Skaneateles, NY 13152
Mechanical Engineer:		

- Identification of Seismic-Force Resistance Systems and Wind-Force Resisting systems
- Required Special Inspections, Tests and Observations
- 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 2025 Uniform Fire Prevention and Building Code.

In addition to the inspections required in 2025 BCNYS sections 110 and 1705, I/we shall perform structural observations as required per 1704.6, and noted in this Statement of Special Inspections.



(Affix professional seal)



(Affix professional seal)

(Affix professional seal)

Structural Engineer

Christopher Latreille May 18, 2026
(Print name / date)

(Signature)

Architect

Andrew Wright (May 18, 2026)
(Print name / date)

(Signature)

Mechanical Engineer

(Print name / date)

(Signature)

-> Seismic-Force-Resisting Systems: The Seismic Design Category (SDC) is A

There ☐ are ☒ are not, seismic-force-resisting systems in this project.

There ☐ are ☒ are not, designated seismic systems.

-> Wind-Force-Resisting Systems:

- ☐ Wind Exposure Category B, basic design wind speed (V) 150 mph or greater.
- ☐ Wind Exposure Category C or D, basic design wind speed (V) 140 mph or greater.
- ☐ Windborne Debris Region (1609.2)
- ☐ Special Wind Region (1609.3 Figures)
- ☐ Tornado Loads (1609.5)
- ☐ Elevators, Escalators, and conveying Systems (1609.7)

Materials, systems, and work required to have special inspections, tests or observation

Check all below that is included in the project and has required special inspections testing and/or structural observations per Chapter 17: Identify documentation drawing location/s:

- ☐ Special Cases:
- ☒ Steel Construction: Drawing S-002
- ☒ Concrete Construction: Drawing S-002
- ☐ Masonry Construction:
- ☐ Wood Construction:
- ☐ Soils:
- ☐ Driven deep foundations:
- ☐ Cast-in-place deep foundations:
- ☐ Helical pile foundations:
- ☐ Structural Integrity of deep foundation elements:
- ☐ Fabricated items:
- ☐ Wind Requirements:
- ☐ Seismic Requirements:
- ☐ Sprayed fire-resistant materials:
- ☐ Mastic and intumescent fire-resistant coatings:
- ☐ Exterior insulation and finish systems:
- ☐ Fire-resistant penetrations and joints:
- ☐ Smoke control systems:
- ☐ Sealing of mass timber:
- ☐ Fabricated assemblies:
- ☐ Structural Observations:
- ☐ Documentation reporting requirements:
- ☐ Other:

	Category		Special Inspector Minimum Qualifications
[X]	Reinforced Concrete	[ ]	Current ICC Reinforced Concrete Special Inspector or ACI Concrete Constr. Inspector
		[ ]	Concrete field testing by an ACI Concrete Field Testing Technical w/ Grade 1 cert.
		[ ]	Intern Engineer with relevant experience
		[ ]	NYS Registered Design Professional Engineer (RDP) with relevant experience
[ ]	Pre-Stressed Concrete		Pretension Tendons
		[ ]	Current ICC Reinforced Concrete certification and ACI Concrete Field Testing Technician with Grade 1 certification plus one year relevant experience
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
			Post-Tension Tendons
		[ ]	Current Post-Tensioning Institute (PTI) certification
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
[X]	Welding	[ ]	Current AWS Certified Welding Inspector
		[ ]	Current ICC Structural Steel and Welding Certificate plus one year of relevant experience
		[ ]	Current Level II cert. from American Society for Non-Destructive Testing (NDT)
		[ ]	Current NDT Level III provided previously certified as NDT Level II
[X]	High-Strength Bolting & Steel Frame Inspection	[ ]	Current ICC Structural Steel and Welding certification and one year of relevant experience
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
[ ]	Masonry	[ ]	Current ICC Structural Masonry certification and one year of relevant experience
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
[ ]	Sprayed Fire-Resistant Materials	[ ]	Current ICC Spray-Applied Fireproofing certification and one year of relevant experience
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
[ ]	Excavation and filling; verification of soils; piling & drilled piers; modular retaining walls	[ ]	Current Level II certification in geotechnical engineering technology/construction from the National Institute for Certification in Engineering Technologies (NICET)
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
[ ]	Inspection of Fabricators	[ ]	Precast: Current ICC Reinforced Concrete certification plus one year relevant experience
		[ ]	Bar Joist: see welding requirements
		[ ]	Metal Building: see welding requirements
		[ ]	Structural Steel: see welding requirements
[ ]	Seismic Items not addressed elsewhere	[ ]	Qualified person with one year of relevant experience
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
[ ]	Exterior Insulation and Finish System	[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
[ ]	Smoke Control	[ ]	Expertise in fire protection engineering, mechanical engineering and certified as an air balancer
		[ ]	The RDP responsible for design
[ ]	Fire-Resistant Penetrations & Joints, Special Cases	[ ]	Qualified person with one year of relevant experience
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience
[ ]	Mass Timber Sealants	[ ]	Qualified person with one year of relevant experience
		[ ]	Intern Engineer with relevant experience
		[ ]	RDP with relevant experience

Contractor's Statement of Responsibility Form

SUCF Project No.: 071099-00 **Project Title:** Replace Storefront and Exterior Doors- Bartle Library, University Union and Couper Administration Building

Building Name: Couper Administration Building

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.: 071099-00 **Project Title:** Replace Storefront and Exterior Doors- Bartle Library, University Union and Couper Administration Building

Building Name: Couper Administration Bldg **Fabricated Assembly(ies)** _____

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, an approved 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.
- Submit a "Certificate of Compliance" at fabrication completion.

Company that conducted the Audit:

Date of Last Audit: _____ **Name:** _____

Contact Person: _____ **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: _____ **Certificate 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 to RDPRC

SUCF Project No.: 071099-00

Project Title: Replace Storefront and Exterior Doors- Bartle Library, University Union and Couper Administration Building

Contractor: _____

Special Inspector / Approved Agency: _____

We have completed the tasked 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 and the Building Official.

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)	(Company Name)
(Print Name)	(Print Title)

Campus Specific General Requirements

1. Temporary Access and Parking

a. Access to the building sites for delivery of construction material, personnel and/or equipment shall be made only from the Bunn Hill service entrance drive.

b. The Contractor and his employees shall protect all permanent improvements to remain, all curbs, pavements and other improvements adjacent to work areas liable to injury. Contractor will be responsible for restoring any damaged areas to the satisfaction of the University.

c. Parking Services shall be contacted, prior to Contractor bidding, to obtain current costs and regulations regarding parking. Permits are required to be obtained in order to park on Campus – For All Vehicles.

d. Permits can be obtained by contacting the TAPS Office:
(Transportation and Parking Services)
Couper Administration Building – Ground Floor (AD-G8)
Binghamton University
PO Box 6000
Binghamton, NY 13902-6000
Office Hours: 8:30am – 3:30pm Monday-Friday
Email: parking@binghamton.edu
Phone: (607) 777-2279
Fax: (607) 777-4646

e. **Parking Violations** – contractors must follow all rules and regulations regarding parking and vehicle traffic laws and regulations. These rules and regulations can be found on our website at https://www.binghamton.edu/services/transportation-and-parking/parking. Contractors will be responsible for all violations.

2. Additional Parking Requirements

a. Loading Dock Regulations:

Campus loading docks may be used for intermittent loading and unloading of Contractor's materials, personnel and tools but not for parking of the delivery vehicle. All other vehicles (workers and company owned) are to use University parking lots and be subject to all applicable campus parking regulations and fees. Loading and unloading at campus loading docks is to be coordinated with the University's Project Coordinator. Temporary parking for loading or unloading at locations other than an existing loading dock shall be arranged, with prior approval, by the campus and should also be coordinated with the University's Project Coordinator.

b. ADA Parking Spaces:
ADA spaces are highly utilized and must remain available for the University's use. ADA access to the building must be maintained. Taking any ADA parking space, or impeding access to the building must be approved and coordinated with the University's Project Coordinator and Parking Services. Contractors parked in, or impeding ADA access to the building without prior authorization, will be subject to applicable campus fines.

3. Protection of Existing Structures, Vegetation and Utilities

The Contractor, during the course of its work, shall not damage any buildings, structures and

utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains and electric power and lighting and telephone cables, lawns, curbs, plants and other improvements. Any damage resulting from the Contractor's operations shall be repaired or replaced at its expense.

4. Architect's/Engineer's Seal

In accordance with Rules and Regulations of the New York State Education Law, Title 8, Part 69.5(b), to all plans, specifications and reports to which the seal of an architect has been applied, there shall also be applied a stamp with appropriate wording warning that it is a violation of the law for any person, unless acting under the direction of a licensed architect, to alter an item in any way. If an item bearing the seal of an architect is altered, the altering architect shall affix to his item the seal and the notation "altered by" followed by his signature and the date of such alteration, and a specific description of the alteration.

5. Asbestos

If the work to be done under this contract contains the abatement of asbestos the following shall apply:

a. Testing - The University and Campus reserve the right to employ an independent testing laboratory to perform testing on the work and air sampling. The Contractor shall be required to cooperate with the testing laboratory.

6. Emergency Notification Roster

a) Emergency Phone Numbers to be used for Life or Property Emergencies. The following phone numbers must be used to contact Ambulance, Fire Department, and Police.

   1) On Campus Phone: # 911, will connect with campus University Law Enforcement Department (ULED)

   1) Cell Phone: # 777-2222, will connect with on campus (ULED)

   2) Reporting Instructions are as follows: “Identify yourself and say where you are: My name is _____, I am at (Building and room, or address), and I want to report a (Fire, Accident).”

b) Project Roster: The Contractor shall produce, distribute and maintain a Project Roster of Primary contacts, Contractors and Sub-contractors. The Roster shall list the following: The Campus will make a form available to the contractor for this information.
   1) Project Title
   2) Project Construction Fund number
   3) Anticipated Date of Completion
   4) Date and revised dates
   5) Line Numbers for individual contacts
   6) Function of Contact (Individual title)
   7) Name of Contact
   8) Company Name & Business Address
   9) Business Phone #’s: Telephone, Fax, Pager, Car and E-Mail address
   10) Emergency Phone #: for 24 hour emergency

7. Unacceptable Materials and Products

a) All materials and products specified herein and /or used on Work of this Project shall not contain Asbestos, Lead, or PCB, and their packaging shall be labeled accordingly by manufacturers.

b) 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.

8. Worker Protection

a) General and regulatory requirements

1) Comply with requirements of worker protection.

2) Comply with governing codes, laws and regulations and industry standards.

b) Respirators and Filters

1) Respirators and filters shall be selected by Contractor.

2) Choice of respirators and cartridges shall correspond to type of Work performed to protect workers from hazardous exposure during removal of lead-based paint, from fibers during handling of non-combustible filler blanket, from respirable dust during sanding of wood moorings from chemical vapors during sealing/finishing the new flooring and painting game lines and logo.

3) Packing boxes of the respirators (masks) and of disposable filters shall show the logo of NIOSH & of MSHA and shall also indicate that this equipment are for use in environments encountered or expected to be encountered during the Work

c) Personal protective equipment (PPE).

1) Provide per OSHA regulations.

9. Services of Licensed Electrician

a) Provide and maintain electrical mechanical shutdown and lockout tag-out of applicable system during construction.

b) Provide all necessary electrical disconnections of relocated/removed existing equipment and reconnections of reinstalled equipment (as applicable).

c) Provide and maintain a correct and a safe utilization by Contractor of all electrical power supplies, of connected tools and equipment, of portable lighting.

d) All electrically powered tools, equipment and portable lighting shall be connected only to circuitry protected at source by Ground Fault Interrupters (GFI).

e) Where Contractor’s cords or temporary wiring traverses through areas outside Contract Limit Lines, provide “pancake” protections to eliminate tripping hazards.

f) Conduct periodic inspections of both electrical wiring and electrically powered equipment to identity damaged, worn-out or “tired” equipment

10. Temporary Power

a) Supplied by Owner

1) Electrical Power will be available at no cost to the Contractor from existing outlets or panels from locations approved by the University.

2) Electrical Usage:

   (a) Convenience outlets maybe utilized at any location

   (b) The Ampacity of the connected equipment may not exceed 50% of the branch circuit rating.

      (i) 120vac. 30A.circuit = max. usage 15Amps

      (ii) 120vac. 20A circuit = max. usage 10Amps

      (iii) 120vac. 15A circuit = max usage 7.5Amps

3) Branch Circuits

   (a) If the Contractor requires a hard-wired branch circuit, the University will provide the panel-board locations and circuit numbers for the required usage.

   (b) All temporary wiring methods shall be in compliance with N.E.C., chapters 2 & 3.

   (c) Type NMC (Romex) is strictly prohibited for temporary branch circuit wiring.

   (d) All GFCI protection will be the responsibility of the Contractor.

   (e) No existing GFCI branch circuits or receptacles (Property of the University) shall be used for personnel protection for the Contractor.

   (f) If the required ampacity exceeds 40% of the panel-board rating and is continuous in nature (3 hours or more). The contractor shall be required to provide a temporary service from the local Utility.

   (g) In lieu of the above, if available and approved by the University the Contractor may utilize (spare) secondary circuit breaker at building distribution equipment. The distance from the distribution equipment to temporary equipment to panel-boards shall not exceed 500 feet.

   (h) Main circuit breaker rating shall not exceed 225 Amps.

4) The Contractor shall be responsible for providing all necessary connections, cables, etc., and removing of the same at completion of construction with approval from the University.

5) The Contractor shall in no way modify the existing circuits at the panel-board to increase capacities of the circuits. If the required power load exceeds the capacities of the available power sources, the Contractor shall be responsible for furnishing, and installing all necessary temporary power poles, cables, fused disconnect switches, transformers and electric meters necessary to provide a temporary power system for the project, and remove same at completion.

b) Provided by Contractor

1) If the Ampacity of the temporary service requirement exceeds 60 amps, for temporary usage, the following will apply:

   (a) The contractor shall provide all necessary temporary power for exterior site construction activities, temporary facilities, construction trailers and staging area as required. The contractor shall be responsible for furnishing and installing all necessary generators, or temporary power poles, cables, fused disconnect, switches, transformers and electric meters.

(b) Temporary power and distribution shall be removed when directed by the University.

11. Temporary Materials

Materials may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions and must not violate requirements of applicable codes and standards.

12. Temporary Stairs, Ladders, Runways, Ramps, and Hoists

a) Comply with governing regulations and applicable standards.

b) Provide and maintain all equipment such as temporary stairs, ladders, ramps, runways, chutes, etc. as required for the proper execution of the Work. Use of Owner's equipment is prohibited.

c) Contractor's responsibilities and liabilities include providing, and proper use, of temporary stairs, ladders, ramps, scaffolding, lifts and other construction aids encompassing all related safety issues.

13. Temporary Enclosures

Provide and be responsible for all temporary enclosures required for protecting the Project from the exterior, for providing passageways, for the protection of openings both exterior and interior and any other location where temporary enclosures and protection may be required.

14. Temporary Fence, Cordoning-Off, and Warning Signs

a) Provide, install and maintain 8' high construction fencing around construction/staging area as indicated on the contract documents. Such fencing shall effectively enclose the designated construction/staging area and prevent unauthorized entry into the construction area.

b) Construction fence shall be installed prior to the start of any work and shall be maintained in accordance with University standards throughout the entire duration of the project. Coordinate discrepancies between site conditions and contract documents with the University's Representative. Upon completion of project, unless otherwise noted, Contractor is responsible for the disassembly and removal of construction fencing from campus, as well as restoration of lawns, pavement, and/or concrete areas under which the fencing was installed.

c) Maintenance of fencing is required at all times during the entire duration of the project. Contractor shall insure, at minimum, at the start and finish of every shift, that top rails are even, panels are straight with adjacent panels, panels are perpendicular/level with the ground, and wire-tires holding panels together are present and adequately tied. Contractor shall re-inspect and adjust fencing after heavy rains and/or winds, or as otherwise required. Where portable chain-link fencing is authorized by the University, adequate sand bags shall be provided in order to secure/hold fencing in place.

d) Areas in and around the fencing shall be maintained in accordance with University standards; including but not limited to mowing of lawn, snow removal, dust mediation, etc. Staging areas shall be neat and orderly; unneeded materials and debris shall be removed from the staging areas at a minimum of weekly, or more often as deemed necessary. Storm manholes within construction fencing shall be properly maintained to prevent debris from entering the manhole.

Contractor will be held responsible to clean manholes if they are found to have debris relating to construction activity.

e) Utility Markings - Prior to the installation of any post-driven permanent fence, the Contractor is responsible for hiring a Utility Marking company to identify and mark underground utilities which may exist below the purposed fencing/staging footprint. If utilities are found to impede the installation of fence, as is shown on the contract documents, the University's Representative shall be contacted. The University's Representative will assist the contractor, to the best of its ability, to provide the contractor with existing site surveys. Damage done to underground utilities due to inadequate investigation or markings will be the responsibility of the contractor to remediate.

f) Provide warning signs, securely anchored to the fence with galvanized steel, tamperproof anchor bolts at each entrance to the site. Sign shall read; ***Construction Area. Do Not Enter. Authorized Personnel Only.*** Provide additional warning signs, as required by governing codes, laws and regulations.

g) The costs associated with this section shall be included in the Base Bid and shall be broken out as a separate line item in the Schedule of Values.

h) Do not fence in Yard Fire Hydrants or other utilities that may require access.

Permanent Chain-Link Fence

1) Minimum 2", 1.048 thick, black coated galvanized steel chain link fence. No fabric or vinyl privacy slats.

2) Minimum 8' high fence with black coated galvanized steel pipe posts.
    a) Posts- Minimum 2-3/8" OD line posts and 2-7/8" OD corner and pull posts. Terminal and corner posts of fence shall be post driven, 24" into ground. Spacing of line posts at 8' maximum.
    b) Top Rail – 1-5/8" OD, black coated steel.
    c) Gate Posts – 3" OD, SS40 Steel, black coated, set in concrete 14" diameter and 42" deep.
    d) Gate – 1-5/8" OD. Double leaf with mid-rail, heavy duty strap hinges, drop bar, latch/hasp, black coated steel.
    e) Tension wire – black coated to match fence and posts. Sufficiently spaced to provide adequate support in holding panels together and upright. Minimum 3 ties per panel connection.
    f) Accessories – stretcher bars, rail ends, post caps, etc., as needed to complete work.

Portable Chain-Link Fencing

1) Acceptable only at the discretion of the University's Representative, in locations were Permanent Chain Link Fencing cannot be used.

2) Minimum 2", 1.048 thick, black coated galvanized steel chain link fence. No fabric or vinyl privacy slats.

3) Minimum 8' high fence with black coated galvanized steel pipe posts.

a) Posts- Minimum 2-3/8" OD line posts and 2-7/8" OD corner and pull posts. Sand bags at base of all posts to adequately hold posts/panels in place. Spacing of line posts at 8' maximum.
b) Top Rail – 1-5/8" OD, black coated steel.
c) Gate Posts – 3" OD, SS40 Steel, black coated.
d) Gate – 1-5/8" OD. Double leaf with mid-rail, heavy duty strap hinges, drop bar, latch/hasp, black coated steel.
e) Tension wire – black coated to match fence and posts. Sufficiently spaced to provide adequate support in holding panels together and upright. Minimum 3 ties per panel connection.
f) Accessories – stretcher bars, rail ends, post caps, etc., as needed to complete work.

Plastic "Snow" Fence

1) The use of green 48" high plastic/polyresin perimeter fence will be authorized for use at the discretion of the University's Representative. The use of orange plastic/polyresin fence is strictly prohibited on campus.

2) 60" high, 14 gauge, steel U-Posts, powder coated green or black shall be used. No wood stakes/posts will be permitted. Maximum post spacing 8'.

3) Maintenance of the vinyl fence is required at all times during its use. Contractor shall inspect fencing at the start and finish of every shift. Contractor shall re-inspect and adjust fencing after heavy rains or winds, or as otherwise required. Fencing shall be installed taught to prevent the fabric from falling over. Posts shall be adequately spaced and driven into the ground.

15. Temporary Access and Directions

a) SUNY Binghamton is located on Route 434 in Vestal, New York. The University can be approached from Route 17, via exit 70 south (route 201), travel about one mile south on route 201 to traffic circle, bear right around the circle and cross the Susquehanna River via the C. Fred Johnson Memorial Bridge. Once across the bridge the University can be seen directly ahead. Stay in the right lane and exit (Route 434 west). The first traffic light after the exit is Bunn Hill road, turn left onto Bunn Hill, the University entrance is on the left. Routes on Campus, to and from the construction site shall be as directed by the Owner or the Owner's Representative.

b) Delivery Instructions: The Contractor / Sub-Contractors shall provide the Project Name and Contractors Name on all deliveries to the Campus and Construction Site. The University will not accept deliveries at Campus Central Receiving.

c) Access to the building sites for delivery of construction material, personnel, and /or equipment shall be made only from Bunn Hill Road service entrance drive on the west side of the campus.

d) In the moving of materials and equipment over existing roadways and adjacent areas, the contractor shall at all times observe the posted speed limit and / or as otherwise directed the maximum loads allowed. Movement over underground facilities that may be damaged from excessive loads, is prohibited at all times.

16. Repair of Parking Areas

a) Contractor shall protect all permanent improvements to remain, including curbs, pavement and other improvements adjacent to work areas liable to injury.

b) Repair of any damage caused to the parking lot assigned to the Contractor as a result of the Contractor's action shall be the responsibility of the Contractor

c) Asphalt pavement specs need to include minimum pavement depths as follows:
   1) gravel base, 10" compacted item # 4
   2) asphalt binder, 3" type # 3
   3) asphalt topping, 1-1/2" type # 6

d) All curbing along roadsides is to be granite curb to match existing.

e) 4' wide curb cuts with texture identification are to be included at intersections of walks and roads.

15. Cooperation with the University

a) Adjacent buildings and grounds will be in use during the term of this Contract. The Contractor shall cooperate with the University in order that the work shall cause as little disturbance and inconvenience as possible. The University's representative shall be local contact for the coordination. The Contractor shall anticipate that certain conditions may develop during construction, which will necessitate changes in procedures and scheduling of work to meet such conditions.

b) The Contractor shall coordinate all construction activities to allow adequate access to and from building doors. The location and method of access may be varied by the Contractor to allow for his operations but shall always be coordinated with the College and Architect's Representative. The Contractor shall provide all barricades, bridges, warning lights and other safety methods to maintain continuous safe access to the public.

BINGHAMTON UNIVERSITY
State University of New York

Environmental Health & Safety
Ground Floor
Health Services Building
Phone 777-2211 Fax 777-4444

HOT WORK PERMIT

Date:	Building:
Location:	

Work To Be Done:

- ❑ Abrasive Saw
- ❑ Cut / Grind
- ❑ Heat Tile
- ❑ Solder
- ❑ Welding _____(type)
- ❑ Other _____

Fumes / Vapors

Location of nearest air intake:

_____

_____

Type of control in place to prevent spread of fumes/vapors in air intake:

_____

_____

Permit Valid:

From: _____ To: _____

Start Time:	Completion Time:
Contractor Name & Cell/Pager #:	Supervisor Name & Cell/Pager #:
B.U. Department:	B.U. Contact Name & Cell/Pager #:

EH&S Authorization:

Person Completing Work:

Person Responsible for Fire Watch:

EH&S **must** be notified immediately upon completion of work 777-2211

EMERGENCY

911 From a Campus Phone or 777-2393

SEE ADDITIONAL REQUIREMENTS ON BACK

BINGHAMTON UNIVERSITY
State University of New York

Environmental Health & Safety
Ground Floor
Health Services Building
Phone 777-2211 Fax 777-4444

FIRE PROTECTION IMPAIRMENT PERMIT

Date:	Building:
Area Protected:	
Reason For Impairment:	

Check If Effected:	**Precautions Taken:**
❑ Sprinkler	❑ Fire Department Notified
❑ Smoke Detector	❑ System Backfed
❑ Heat Detector	❑ All Hazardous Operations Stopped
❑ Halon	❑ Fire Watch
❑ Hydrant	❑ Other _____
❑ Fire Panel	
❑ Other _____	

Out of Service:

Date: _____ Time: _____

In Service:

Date: _____ Time: _____

Contractor Name & Cell:	Supervisor Name & Cell:
B.U. Department:	B.U. Contact Name & Cell:

Person In Charge of Fire Watch (Name, Cell):

BU Authorization to begin work (signature):

BU Verification of full system restoration (signature):

EH&S **must** be notified immediately upon completion of work 777-2211

SUNY State University Construction Fund

May 28, 2026

RE: SUCF Project No. 071099-00
Replace Storefront and Exterior Doors- Bartle Library, University Union, Couper Admin
State University of New York at Binghamton

Mr. Alexander E. McQuilkin
Associate Vice President for Facilities Management
State University of New York at Binghamton
P.O. Box 6000
Binghamton, NY 13902-6000

Re: Single Source Approval- Siemens EMS Control

Dear Mr. McQuilkin:

Your request for single source approval dated December 3, 2025, for Siemens EMS Control has been approved.

The consultant will be advised, and the contract documents will specify only the approved manufacturer(s).

Sincerely,

Donald DeLude
Associate Project Coordinator

cc: J. Cordi
A. Garrity
C. Knapp
S. Newbold
N. Bouteiller
P. Gibbons-Mahler
R. Potts
J. Lovelady
S. Mansaray

State University Construction Fund
H. Carl McCall SUNY Building, 353 Broadway, Albany, NY 12246
518.320.3200
www.sucf.suny.edu

SOLE OR SINGLE SOURCE APPROVAL REQUEST

State University Construction Fund

April 2026

1	Project Title		Replace Storefront and Exterior Doors - Bartle Library, University Union, Couper Admin
	Project Number		071099-00
	Campus		Binghamton
	Brief Project Description		Replace storefronts in their entirety including aluminum framing, doors, hardware, and glazing. Also includes landscape and paver work at library, card access, and new vestibule at rear egress of Couper Administration.
	Project Bid Day Budget		$7,805,000
	Currently Scheduled Bid Date		8/24/2026
	Product or service for which request is being made		Siemens EMS Controls
	Dollar value of product or service		$8,400.00
	If the dollar value of the product or service is more than $50,000, OSC approval may be required, which may take additional time to obtain and this time should be accounted for when making a request.		
2	Is the manufacturer's quote for the product or service reasonable when compared with the consultant's estimated cost for the product or service? Attach copy of the manufacturer's quote that the campus has obtained.	Yes	*(Answer Yes or No. If no, why not?)*
3	Sole Source		Procurement in which only one offerer is capable of supplying the required commodities or services.
	Single Source	**X**	Procurement in which although two or more offerers can supply the required commodities or services the state agency may award the contract to one offerer over the other.
4	**If Sole Source**		
	In what way(s) is the product or service unique?		NA
	What benefits of the product or service are unique?		NA
	Does any other product or service have substantially equivalent or similar benefits?		NA
5	**If Single Source**		

	What is the rationale for selecting this product or service?		The Campus has standardize their Campus wide system on Siemens EMS and its central reporting backbone cable links all the buildings on Campus. Continuity of the service is the rationale for selecting this system and introducing another, totally different system will lead to confusion, lack of coordination, service interruptions and/or complications.
	What benefits will the product or service provide over other vendor products?		Extending the existing Siemens EMS system offer unique advantages such as: - The extended system can hook into the existing system server and software. Allowing other systems will require the installation of additional servers, software, and monitors, furniture and require related floor space that is not currently available in the space housing the system control. Installing another system would incur significant additional costs for designing, constructing and equipping improvements to the existing system control space. - The extended system will be covered under the existing maintenance contracts that the Campus has with current vendor. If another manufacturer is used, another service contract would have to be established and managed for equipment and software upgrades. - Allowing other systems will complicate the maintenance procedures, increasing the amount of spare parts kept in stock and increasing service costs. There are efficiencies and lower maintenance costs for a single system rather than multiple systems. - Allowing other systems will complicate the training procedures, increasing the amount training of maintenance staff and users, and increasing ongoing training costs. Software upgrades would be on a different cycle leading to more training cycles. - Allowing other systems will complicate system use, maintenance staff relying on one central control monitor and device for many buildings would need to rely on several discrete system monitors and devices.
	Is it an extension of an existing system?		Yes, the system currently exists in Bartle Library, University Union, and Couper Administration and other buildings on campus.
	What other alternatives were considered and why are they not acceptable?		No alternatives were recommended as there has already been substantial investment in the existing system. The work area of this project represents less than 5% of the 98% GSF covered by the existing system.
6	**Answer the Following Questions for Both Sole and Single Source**		

	Have bid documents been written in a fair and equitable manner, such that sole or single sourcing is limited to only those specific products and services for which it is required, and all other attendant and ancillary products and services will be competitively bid?	Yes	*(Answer Yes or No. If No, request will not be entertained.)*
	Is the letter from the campus that requests sole or single source attached? Does it contain the certification that the campus is operating in good faith, is motivated without interest to arbitrarily restrict or inhibit competition, and is not motivated by the intent to reward a particular vendor?	Yes	*(Answer Yes or No. If No, request will not be entertained.)*
7	**APPROVALS**	**Initial Here**	**Name (typed)**
	Coordinator	DWD	Don DeLude Jr.
	Regional Director	CK	Casey Knapp
	Director of Design	MM	M. Moore or Designee

BINGHAMTON UNIVERSITY
State University of New York

PO Box 6000
Binghamton, NY 13902-6000
(607) 777-2391 - Fax (607) 777-6643

FACILITIES MANAGEMENT DEPARTMENT

December 3, 2025

Donald DeLude
State University Construction Fund
353 Broadway, Albany NY 12246

Re: Binghamton University Storefront / Exterior Doors Replacement Project
SUCF Project # 071099-00
Single Source Justification – Procurement of Control Devices for Energy Management System

Dear Mr. DeLude,

Binghamton University's centrally controlled energy management system (EMS) supplied and maintained by Siemens Industry monitors and controls over 220,000 mechanical and electrical functions in over 98% of the University operated building space. The University has benefitted from the networked EMS system using a single user interface platform to gain operational efficiency and energy savings as evidenced by our energy performance data. BU Facilities Management staff performs due diligence when sourcing products and services for our EMS system and found Siemens' products and services to be cost competitive in almost all cases. If there is any hardware cost advantage based on other vendors' bids, it would likely be offset by the cost of system integration and / or quality of data transmission.

Several existing unitary heating cooling equipment to be replaced under SUCF 071099-00 project are currently controlled through Siemens EMS system. Keeping the equipment control through the existing EMS infrastructure would be the most sensible and cost effective. Binghamton University respectfully requests single source procurement and installation of EMS control devices under this project by Siemens Industry, Inc.

Please feel free to reach out via email at sdejohn@binghamton.edu for any questions or concerns you might have. Thank you.

Sincerely,

Sandy DeJohn
Assistant Director for Utilities and Mechanical Systems

SIEMENS

May 27, 2026

PREBID BUDGET

To: Division 23 (Mechanical) Contractors
To: All

PROJECT: BU Replace Storefront & Exterior Doors – Bartle Library, University Union, Couper Administration Building
ESTIMATE No: TBD
BID DATE: N/A
RECOGNIZED ADDENDA: N/A

Siemens Industry, Inc. proposes to furnish and install the specified equipment and services for the control of HVAC equipment shown on the project drawings and as indicated in the specifications. **The system will be an extension of the existing Campus wide Siemens DESIGO CC® System.**

Our proposal includes:

- DDC controls for the equipment listed below per plans and specifications, including and limited to the following:

BASE BID:

- Two (2) Cabinet Unit Heaters (CUH-A,B)
  a) EXCLUDES CUH's
  b) Includes one (1) room automation station per CUH
  c) Includes one (1) space temperature sensor per CUH
  d) Includes one (1) control valve per CUH
- Two (2) existing Cabinet Unit Heater DDC removal

ALSO INCLUDED:

- Required low-voltage control wiring and conduit as required in mechanical rooms
- Professional labor for DDC system programming and startup
- Commissioning assistance
- A complete system installation Submittal prior to construction
- As-Built documents upon project completion
- Single point verification calibration
- One-year warranty on all system components
- Required controllers to accommodate point capacity and programming for specified sequence of operation
- Graphics and point database created for all equipment being installed/modified under this project

BASE BID BUDGET:..... $8,400

Juan Blanco
Account Executive
Siemens Industry, Inc
6075 East Molloy Rd
Syracuse, NY 13211

Office: (315) 437-2726
Cellular: (315) 263-0452
Fax: (866) 671-5961
juan.v.blanco@siemens.com

Notes:

1) ***This scope of work is to be included as part of any contract which results from our proposal for this project.***
2) ***Our Price does NOT include per project aggregate insurance costs***
3) ***Siemens Standard Terms and Conditions are applicable to this proposal.***
4) ***Payment terms are 30 days from receipt of invoice.***
5) ***Price does NOT include Sales or Use Tax. Order must include required tax certificates.***
6) ***Order is subject to an approved credit check without exception***
7) ***Siemens Industry, Inc., Smart Infrastructure has reviewed the Bid Documents provided for review. We agree with the intents and purposes described in the Bid Documents but take exception to the wording of certain provisions. Therefore, we reserve the right to discuss and revise the Contract/Agreement and the terms and conditions contained and incorporated therein with you or your representative to reach a mutually satisfactory document encompassing all of the intents and purposes described in the Bid Documents within a reasonable time after the award of the work.***
8) ***Siemens' pricing is subject to adjustment for any direct or indirect new or modified taxes, duties, tariffs, or equivalent measures imposed by any U.S. or foreign governmental authority that are applicable to our offering, including any hardware, software, or service components contained therein. Siemens shall be entitled to an equitable adjustment in pricing to reflect the impacts of any such measures. Please note that the aforementioned measures specifically include any price adjustments required as a result of increased costs incurred by Siemens due to tariffs imposed by any governmental authority (including, without limitation, increased costs due to tariffs imposed by any governmental authority on Siemens' vendors).***

OUR PROPOSAL DOES NOT INCLUDE:

- New BMS Server and Workstation (Front End) – Already existing on campus.
- Installation and wiring of any controls not provided by Siemens Industry, Inc. unless otherwise specified above.
- Furnishing Fire/Smoke Dampers
- Fire/Smoke Damper Control – unless otherwise specified above
- Fire Alarm System Integration - unless otherwise specified above
- Sound Attenuators
- Any Gas Meters
- Any lighting controls and/or associated wiring
- Any and all asbestos related work
- Any cutting, patching, or painting
- Tax & Bond
- Furnishing smoke and/or fire dampers and associated power and control wiring
- Furnishing, installation, wiring, and start-up of motor starters/ VFD's for mechanical and HVAC equipment unless otherwise noted above
- Installation of automatic/control dampers, control valves, and wells
- Installation of refrigerant instruments, wells, valves, and other accessories
- Smoke detectors furnishing, installation, power and control wiring
- Louver/damper assemblies

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SIEMENS

- Occupancy Sensors and/or connection to occupancy sensors
- Flow sensor/meter installation
- Water differential pressure sensor installation
- Videotaping of training

Proposal Accepted:
Siemens Industry, Inc. is authorized to proceed with the work as proposed.

Purchaser _____

By _____

Title _____

Date _____

Proposal Submitted:
Siemens Industry, Inc.

By **Juan Blanco**

Title Account Executive

Date May 27, 2026

Juan Blanco
Account Executive
Siemens Industry, Inc
6075 East Molloy Rd
Syracuse, NY 13211

Office: (315) 437-2726
Cellular: (315) 263-0452
Fax: (866) 671-5961
juan.v.blanco@siemens.com

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. The Work of this Section Includes:

1. Demolition and removal of selected portions of exterior or interior of building or structure and site elements.
2. Removal and salvage of existing items for delivery to Owner and removal of existing items for reinstallation.

B. Related Sections:

1. Section 02 82 00 “Asbestos Abatement” for existing materials containing asbestos.
2. Section 02 83 10 “Lead Safe Work Practices” for existing materials containing lead.
3. Section 02 84 00 “PCB Caulk Removal” for existing materials containing lead.

1.2 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner as indicated.

C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage; prepare for reuse; and reinstall where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed.

1.3 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.4 COORDINATION

A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

1.5 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at Project site.

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.
6. Review and finalize protection requirements.
7. Review procedures for noise control and dust control.
8. Review storage, protection, and accounting for items to be removed for salvage or reinstallation.

1.6 INFORMATIONAL SUBMITTALS

A. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property**, for dust control and , for noise control**. Indicate proposed locations and construction of barriers.

B. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Temporary interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of elevator and stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

C. 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 in accordance with EPA regulations. Include name and address of technician and date refrigerant was recovered.

D. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.7 CLOSEOUT SUBMITTALS

A. Inventory: Submit a list of items that have been removed and salvaged.

1.8 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials:

1. Hazardous materials are present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials, Section 00 31 26 “Existing Hazardous Material Information,” is included in this Project Manual for review and use. Examine report to become aware of locations where hazardous materials are present.

a. Hazardous material remediation is specified in Section 02 82 00 "Asbestos Abatement.", Section 02 83 10 “Lead Safe Work Practices” and Section 02 84 00 “PCB Caulk Removal”.
b. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified in the above refenced specification sections.”.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI/ASSP A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

C. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

3.2 PREPARATION

A. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

B. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
4. Cover and protect furniture, furnishings, and equipment that have not been removed.
5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 010000 "General Requirements."

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location and cleaned and reinstalled in their original locations after selective demolition operations are complete.

D. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment in accordance with 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 UTILITY SERVICES AND BUILDING SYSTEMS

A. Existing Services/Systems to Remain: Maintain utilities and building systems and equipment to remain and protect against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utilities and building systems serving areas to be selectively demolished.

1. Arrange to shut off utilities with utility companies.
2. If disconnection of utilities and building systems will affect adjacent occupied parts of the building, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to those parts of the building.
3. Demolish and remove existing building systems, equipment, and components indicated on Drawings to be removed.

    a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
    b. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
    c. Equipment to Be Removed: Disconnect and cap services and remove equipment and components.

4. Abandon existing building systems, equipment, and components indicated on Drawings to be abandoned in place.

    a. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
    b. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

5. Remove and reinstall/salvage existing building systems, equipment, and components indicated on drawings to be removed and reinstalled or removed and salvaged:

3.4 SALVAGE/REINSTALL

A. Removed and Salvaged Items:

1. Clean salvaged Generator Fuel Oil Port and Fill Alarm and reinstall according to Vendor’s written instructions.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's temporary storage area designated by Owner.
5. Protect items from damage during transport and storage.

3.5 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction.

Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.

3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
5. Maintain fire watch during and for at least One (1) hour after flame-cutting operations.
6. Maintain adequate ventilation when using cutting torches.
7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed trafficways if required by authorities having jurisdiction.
2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete:

1. Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw and then remove concrete between saw cuts.

B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.

C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished and then break up and remove.

D. Resilient Floor Coverings: Remove floor coverings and adhesive in accordance with recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings."

E. Terrazzo Flooring:

1. Remove existing terrazzo floor finish only to extent required, preserving substrate where indicated.
2. Remove adhesives, setting beds, fillers, and coatings in accordance with manufacturer and industry best practices, using approved hand or power tools; do not use solvent-based strippers where prohibited.
3. Protect adjacent surfaces from damage; use protective coverings, temporary barriers, and dust/ slurry controls.
4. Clean exposed substrate after terrazzo removal; remove residual debris, adhesive, and dust.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and recycle or dispose of them in accordance with Section 017419 "Construction Waste Management and Disposal."

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

3.8 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 02 82 00 – ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. The Asbestos Abatement Contractor herein referred to as the Contractor, will be responsible for performing all Work in strict accordance with the Project Documents and all governing codes, rules, and regulations. Where conflicts occur between the Project Documents and applicable codes, rules, and regulations, the more stringent shall apply. Unless otherwise expressly indicated, the requirements of this specification are solely the Contractor's responsibility.

B. This asbestos abatement Project will consist of the removal and disposal of the following asbestos-containing materials (ACMs) as indicated on the contract drawing titled; *Hazardous Materials Abatement Plan*, HM-100, HM-101A, HM-101B, HM-101U, HM-102B, and HM-103B.

1. 10 square feet (SF) of gray pliable door caulk
2. 10 SF of gray pliable expansion joint caulk
3. 10 SF of white/gray panel glazing compound
4. 8 SF of gray/tan side lite caulk
5. 8 SF of gray/tan side window caulk
6. 10 SF of gray window caulk
7. 10 SF of gray window glazing compound
8. 10 SF of black pliable window glazing compound
9. 720 SF of assumed AC gray vermiculite spray-on fireproofing

C. Asbestos abatement locations and quantities are based on the following:
1. *Limited Pre-Renovation Hazardous Materials Inspection Report – SUNY Binghamton University – Replace Storefront - Bartle Library,* prepared by Ravi Engineering & Land Surveying, P.C. (RE&LS) dated April 2025.

2. *Limited Pre-Renovation Hazardous Materials Inspection Report – SUNY Binghamton University – Replace Storefront – University Union,* prepared by RE&LS dated April 2025.

3. *Limited Pre-Renovation Hazardous Materials Inspection Report – SUNY Binghamton University – Replace Storefront – Couper Administration Tower,* prepared by RE&LS dated April 2025.

D. The Contractor shall be aware of all conditions of the Project and is responsible for verifying quantities and locations of all Work to be performed. Failure to do so shall not relieve the Contractor of its obligation to furnish all labor and materials necessary to perform the Work.

E. The Contractor shall coordinate all Work with the Work of other trades.

1.2 SPECIAL JOB CONDITIONS

A. The Contractor shall include in their bid asbestos abatement activities including, but not limited to, mobilization and demobilization, Work area preparation, gross removal activities, cleaning activities, temporary weather protection over building openings and waste removal.

1.3 PERMITS AND COMPLIANCE

A. The Contractor shall assume full responsibility and liability for compliance with applicable Federal, State, and local laws, rules, and regulations pertaining to Work practices, protection of Workers, authorized visitors to the site, persons, and property adjacent to the Work.

B. The Contractor shall perform asbestos related Work in accordance with NYSDOL 12 NYCRR Part 56 (Industrial Code Rule 56), NESHAPS 40 CFR 61, AHERA 40 CFR Part 763 and OSHA 29 CFR 1926.1101, as specified herein.

C. The Contractor must maintain current licenses/certifications pursuant to New York State Department of Labor and Department of Environmental Conservation for all Work related to this Project, including the removal, handling, transport, and disposal of asbestos-containing materials.

D. The Contractor must have and submit proof upon request that any persons employed by the Contractor to engage in or supervise Work on any asbestos Project have a valid NYS asbestos handling/supervisor certificate pursuant to 12 NYCRR Part 56-3.

E. The Contractor shall comply fully with any variances secured from regulatory agencies. Should the Contractor choose to apply for any variance, approval of the Owner’s Representative is first required.

F. It is the sole responsibility of the Contractor to determine what, if any, patents are applicable to the Project. The Contractor shall pay all royalties and/or license fees. The Contractor shall defend all suits or claims for infringement of any patent rights and save the Owner, Architect, Engineer, Owner’s Representative, and Construction Manager harmless from loss, including attorney's fees, on account thereof.

G. The contractor shall comply with The New York State Uniform Fire Prevention and Building Code, or its successor during all Work at the Site.

H. Failure to adhere to the Project Documents shall constitute a breach of the Contract and the Owner shall have the right to and may terminate the Contract provided, however, the failure of the Owner to so terminate shall not relieve the Contractor from future compliance.

1.4 SUBMITTALS

A. Pre-Abatement Submittals: No Work shall begin until these submittals are returned with the Owner Representative’s No Exceptions Taken (NET) action stamp. The Contractor shall submit an electronic copy of the documents listed below:

1. Permits, Licenses, Notifications, and Certifications:

a. New York State Department of Labor (NYSDOL) Asbestos Contractor License.
b. NYSDOL Project Notification.
c. United States Environmental Protection Agency (USEPA) Project Notification with certified mail read-receipt.
d. NYSDOL Asbestos Handler or Supervisor Certificate for each employee who Works on the project.
e. Copy of New York State Department of Health (NYSDOH)-2832 form or equivalent proof of training for each handler/supervisor who Works on the project.
f. Physician's written opinion that the employee is fit for duty.
g. Copies of all variances, amendments and re-openings being used for the project, if applicable.
h. Any other Notifications: As required by Federal, State, and local regulatory agencies.
i. New York State Department of Environmental Conservation (NYSDEC) Part 364 Waste Haulers Permit valid for the duration of the project.
j. NYSDEC Part 360 Solid Waste Disposal Permit (or out of state equivalent) valid for the duration of the project.
k. NYSDOH Approved Laboratory Certification for required Occupational Safety and Health Administration (OSHA) air sampling.

2. Equipment: The Contractor shall submit the Manufacturer's information on all of the following equipment at a minimum. Additional equipment that will be used but not listed shall also be included in the submittal:
   a. HEPA Vacuums
   b. Respirators (including filter cartridges)
   c. Protective Clothing
   d. Duct Tape
   e. Disposal Bags

3. Safety Data Sheets (SDS): The Contractor shall submit copies of SDS (note: MSDS sheets will not be accepted) for each chemical or material used for projects including but not limited to:
   a. Encapsulants
   b. Remover/Solvents
   c. Cleaner/Disinfectants
   d. Surfactants
   e. Spray Adhesive

4. Progress Schedule.
   a. Show the complete sequence of abatement activities and the sequencing of Work within each Work Area.
   b. Show the dates for the beginning and completion of each major element of Work including substantial completion for the Project.

5. The Contractor shall submit a written Health and Safety Plan and designate, in writing, whom will be deemed the Competent Person as defined by OSHA.

B. On-Site Information: Refer to 12 NYCRR Part 56, Subpart 7.3, Asbestos Abatement Contractor Daily Project Logs and Subpart 3.4(a)(2) Project Record.

C. Post Abatement Submittals: The Contractor shall submit electronic copies to QPK Design and Ravi Engineering & Land Surveying, P.C. for review and approval.
1. The name, address, NYS Department of Motor Vehicle Photo Identification Card number, last four digits of social security number and asbestos certificate number of the person who supervised the asbestos project.
2. The location and description of the asbestos project.
3. The amount of asbestos or asbestos material (including asbestos contaminated elements) that was abated.
4. The commencement and completion dates of the Project.
5. The name, address and current NYS Environmental Laboratory Approval Program (ELAP) registration number of the laboratory that was used for contractor daily air sample analysis on the Project.
6. The name, asbestos handling license number, and address of the Project monitoring asbestos contractor that was used on the Project.
7. The name and address of the deposit or waste disposal site or sites where the asbestos waste material was deposited or disposed.
8. The name and address of any sites that were used for the interim storage of asbestos or asbestos waste materials prior to final deposit or disposal.
9. The name and address of any transporter(s) that were used to transport asbestos or asbestos material.
10. The name, addresses, NYS Department of Motor Vehicle Photo Identification Card number, last four digits of social security number and asbestos license or certificate number of all persons who were engaged on that portion of the asbestos Project for which the asbestos Contractor has responsibility.
11. Copy of the asbestos abatement supervisor’s daily project log as specified in 56-7.3.
12. Copy of all waste disposal manifests, and disposal logs.

1.5 APPLICABLE STANDARDS AND REGULATIONS

A. The Contractor shall comply with the codes and standards referenced in section 1.3B of this specification, except where more stringent requirements are shown or specified.

B. Federal Regulations.
1. 29 CFR 1910.1200, "Hazard Communication" (OSHA)
2. 29 CFR 1910.134, "Respiratory Protection" (OSHA)
3. 29 CFR 1910.145, "Specification For Accident Prevention Signs and Tags" (OSHA)
4. 29 CFR 1926, "Safety And Health Regulations For Construction" (OSHA)
5. 29 CFR 1926.1101, "Asbestos " (OSHA)
6. 29 CFR 1926.500 "Guardrails" (OSHA)
7. 40 CFR 61, Subpart A, "General Provisions" (EPA)
8. 49 CFR 171-172, Transportation Standards (DOT)

C. New York State Regulations.
1. 12 NYCRR, Part 56, "Asbestos", Industrial Code Rule 56 (DOL)
2. 6 NYCRR, Parts 360, 364, Disposal and Transportation (DEC)
3. 10 NYCRR, Part 73, "Asbestos Safety Program Requirements" (DOH)

D. Local Regulations: *none specified*.

E. Standards and Guidance Documents.
1. American National Standard Institute (ANSI) Z88.2-80, Practices for Respiratory Protection.
2. ANSI Z9.2-79, Fundamentals Governing the Design and Operation of Local Exhaust Systems.
3. EPA 560/585-024, Guidance for Controlling Asbestos Containing Materials in Buildings (Purple Book).
4. EPA 530-SW-85-007, Asbestos Waste Management Guidance.

1.6 NOTICES

A. The Contractor shall provide NYSDOL Project Notification.
1. At least ten (10) calendar days prior to beginning abatement activities send written notification to:

New York State Department of Labor
Division of Safety and Health, Asbestos Control Program
State Office Campus
Bldg.12 – Room 161B
Albany, NY 12240

B. The Contractor shall provide USEPA notification, if applicable.
1. At least ten (10) Working days prior to beginning abatement activities, send written notification to:

U.S. Environmental Protection Agency – Region 2
National Emissions Standards for Hazardous Air Pollutants (NESHAPS) Coordinator
290 Broadway
New York, NY 10007-1866

C. The Contractor shall post and/or provide Building Occupant Notification at least ten (10) days prior to beginning abatement activities as required by 12 NYCRR Part 56-3.4. The posting shall include the following information:
1. The location(s) of the asbestos abatement Project.
2. The amounts and types of asbestos-containing materials being abated.
3. The commencement and completion dates of the Project.
4. The name and asbestos license number of the abatement Contractor.
5. The name and address of the Air Monitoring Firm and laboratory.

D. On multiemployer Worksites, the Contractor shall notify other trades of the establishment of regulated Work areas and the measures taken to ensure employees are not exposed to asbestos. The General Contractor shall determine if the Contractor is in compliance with the multiemployer Worksite standard.

1.7 PROJECT MONITORING

D. The Owner shall engage the services of a Project Monitoring Firm who shall serve as the Owner's Representative in regard to the performance of the asbestos abatement Project and provide direction as required throughout the entire abatement period.

E. The Contractor is required to provide and ensure cooperation of its personnel with the Project Monitoring Firm for the Project Monitoring functions. The Contractor shall comply with all direction given by the Project Monitor during the course of the Project.

F. The Project Monitoring Firm shall staff the Project with a trained and Certified person to act on the Owner's behalf at the job site. This individual shall be designated as the Abatement Project Monitor.
   1. The Project Monitor shall have the authority to direct the actions of the Contractor verbally and in writing to ensure compliance with the Project documents and all regulations. The Project Monitor shall have the authority to Stop Work when gross Work practice deficiencies or unsafe practices are observed.
      a. Such Stop Work order shall be effective immediately and remain in effect until corrective measures have been taken and the situation has been corrected. Stand-by time required to resolve the situation shall be at the Contractor's expense.

1.8 CONTRACTOR AIR SAMPLING

G. If a valid exposure assessment is not available for the duration of the Project, the Contractor shall conduct air sampling that is representative of both the 8-hour time weighted average and 30-minute short-term exposures to indicate compliance with the permissible exposure and excursion limits daily. If a negative determination is made, the minimum respiratory protection assigned shall be a non-disposable half-face air purifying respirator unless the employee requests a higher protection factor.

H. The Contractor's laboratory analysis of air samples shall be conducted by an NYSDOH ELAP approved laboratory, subject to approval of the Owner’s Representative.

I. Results of personal air sample analyses shall be available, verbally, within twenty-four (24) hours of sampling and shall be posted upon receipt. Written laboratory reports shall be delivered and posted at the Work site within five (5) days.

1.9 PROJECT SUPERVISOR

J. The Contractor shall designate a full-time Project Supervisor who shall meet the following qualifications:
   1. The Project Supervisor shall hold New York State Certification as an Asbestos Supervisor.
   2. The Project Supervisor shall meet the requirements of a "Competent Person" as defined by OSHA 1926.1101 and shall have a minimum of one-year experience as an asbestos supervisor.

K. If the Project Supervisor is not on-site at any time whatsoever, all Work shall be stopped. The Project Supervisor cannot be removed from the Project without the written consent of the Owner and the Owner’s Representative. The Project Supervisor shall be removed from the Project if so requested by the Owner.

L. The Project Supervisor shall be responsible for the performance of the Work and shall represent the Contractor in all respects at the Project site. The Supervisor shall be the primary point of contact for the asbestos Project Monitor.

1.10 TEMPORARY UTILITIES

M. The Contractor shall provide sufficient temporary electric power to complete the abatement Project in a timely manner. The Contractor shall provide Ground Fault Circuit Interrupters (GFCIs) located at the source for all electric requirements within the asbestos Work Area.
   1. Where available, the Contractor can obtain temporary electric power from Owner's existing system. Otherwise provide power from other sources (i.e. generator).
   2. The Contractor shall provide temporary wiring and "weatherproof" receptacles in sufficient quantity and location to serve all HEPA equipment and tools.
   3. The Contractor shall provide adequate power sources as required by the Project Monitor for the purposes of collecting air samples within the Work area.
   4. All power to the Work Area shall be brought in from outside the area through GFCIs at the source.

N. The Contractor shall provide temporary lighting with "weatherproof" fixtures for all Work Areas including decontamination chambers.
   1. The entire Work Area shall be kept illuminated at all times Work is being performed.
   2. The Contractor shall provide lighting as required by the Project Monitor for the purposes of performing required inspections.

O. All temporary devices and wiring used in the Work Area shall be capable of decontamination procedures including HEPA vacuuming and wet-wiping.

P. Utilize domestic water service, if available, from Owner's existing system. The Contractor shall provide hot water heaters with sufficient capacity to meet Project demands.

PART 2 - PRODUCTS

2.1 PROTECTIVE CLOTHING

A. The Contractor shall provide personnel utilized during the Project with disposable protective whole body clothing, head coverings, gloves and foot coverings as well as provide disposable plastic or rubber gloves to protect hands. Cloth gloves may be worn inside the plastic or rubber for comfort, but shall not be used alone. Make sleeves secure at the wrists and make foot coverings secure at the ankles by the use of tape, or provide disposable coverings with elastic wrists or tops.

B. The Contractor shall provide sufficient quantities of protective clothing to ensure a minimum of four (4) complete disposable outfits per day for each individual performing abatement Work including the Project Monitor.

C. Eye protection and hard hats shall be provided by the Contractor and made available for all personnel entering any Work Area.

D. The Contractor shall provide Authorized Visitors with suitable protective clothing, headgear, eye protection, and footwear whenever they enter the Work Area.

2.2 SIGNS AND LABELS

A. Generator identification information shall be affixed to each waste container indicating the following printed in indelible ink:

Generator Name: State University of New York
Facility Name: Binghamton University
Facility Address: *4400 Vestal Parkway East, Binghamton, New York 13902*

2.3 PROJECT LOG BOOK

A. The Project Supervisor shall document all Work performed daily and note all inspections required by 12 NYCRR Part 56, i.e. testing and inspection of barriers and enclosures.

2.4 LADDERS

A. The Contractor shall provide ladders necessary to accomplish the Work of this Contract. The type, erection and use of all ladders shall comply with all applicable OSHA construction industry standards.

B. The Contractor shall provide ladders as required by the Owner's Representative for the purposes of performing required inspections.

C. Ladders shall be inspected daily by the Competent Person. The results of the ladder inspection shall be documented in the Supervisors Project log book.

2.5 DISPOSAL BAGS, DRUMS, AND CONTAINERS

A. Provide 6-mil polyethylene disposal bags printed with asbestos danger labels. Bags shall also be imprinted with U.S. Department of Transportation required markings.

B. Provide 30 or 55-gallon capacity fiber or metal drums capable of being sealed air and water tight if asbestos waste has the potential to damage or puncture disposal bags. Affix asbestos danger labels on lids and at one-third points around drum circumference to assure ready identification.

C. Containers and bags must be labeled with the names of the waste generator and the location at which the waste was generated in accordance with 40 CFR Part 61 Subpart M, NESHAPS.

D. Labeled asbestos-containing material waste containers or bags shall not be used for non-asbestos-containing material waste or trash. Any material placed in labeled containers or bags, whether turned inside out or not shall be handled and disposed of as asbestos-containing material waste.

2.6 HEPA VACUUM EQUIPMENT

A. All vacuuming performed under this contract shall be performed with High Efficiency Particulate Absolute (HEPA) filter equipped industrial vacuums conforming to ANSI Z9.2.

B. Provide tools and specialized equipment including scraping nozzles with integral vacuum hoods connected to a HEPA vacuum with flexible hose.

C. Each HEPA equipped vacuum shall be equipped with a HEPA filter that has never been used or each HEPA equipped vacuum must be inspected and tested prior to being brought on site for the proper operation and performance of the HEPA filter. Inspection and testing shall be in accordance with the manufacturer's recommendations. Proof of inspection and testing for each HEPA equipped vacuum must be made available to the Owner or Owner's Representative upon request. Each HEPA equipped vacuum must be tagged with the date of the last HEPA filter change.

2.7 POWER TOOLS

A. Power tools used to drill, cut into, or otherwise disturb known or suspect asbestos material that have not been determined to be non-asbestos containing by laboratory analysis shall be equipped with HEPA filtered local exhaust ventilation.

B. Each HEPA power tool shall be equipped with a HEPA filter that has never been used or each HEPA equipped power tool must be inspected and tested prior to being brought on-site for the proper operation and performance of the HEPA filter. Inspection and testing shall be in accordance with the manufacturer's recommendations. Proof of inspection and testing for each HEPA equipped power tool must be made available to the Owner or Owner's Representative upon request. Each HEPA equipped power tool must be tagged with the date of the last HEPA filter change.

2.8 HEPA EQUIPPED NEGATIVE AIR UNITS

A. Each HEPA equipped negative air unit shall be equipped with a HEPA filter that has never been used or each HEPA equipped negative air unit must be inspected and tested prior to being brought on site for the proper operation and performance of the HEPA filter. Inspection and testing shall be in accordance with the manufacturer's recommendations. Proof of inspection and testing for each HEPA negative air unit must be made available to the Owner or Owner's Representative upon request. Each HEPA equipped negative air unit must be tagged with the date of the last HEPA filter change. At a minimum the Primary HEPA filter must be replaced every 600 hours.

B. Each negative air unit must be capable of fitting through a standard door or access hatch where required.

2.9 POLYETHYLENE SHEETING

A. All polyethylene (plastic) sheeting used on the Project (including but not limited to sheeting used for critical and isolation barriers, fixed objects, waste container) shall be at least 6-mil fire retardant sheeting.

B. Decontamination enclosure systems shall utilize at least 6-mil opaque fire retardant plastic sheeting. At least two (2) independent layers of 6-mil reinforced fire retardant plastic sheeting shall be used for the decontamination enclosure flooring.

2.10 BUILDING MATERIALS

A. Building materials installed by the contractor (either temporary or permanent) shall be asbestos free.

2.11 WETTING AGENTS

A. Wetting of asbestos-containing or asbestos-contaminated materials shall be performed before, during and after removals using water to which a surfactant has been added. Contractor shall follow manufacturers' recommendations for mixing surfactant and water.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

A. Comply with the rules and regulations referenced in Part 1 of this Section.

B. Prior to Work Area preparation the Work Area must be vacated by non-Certified persons and building occupants.

C. All demolition activities necessary to access asbestos-containing materials or suspect asbestos-containing materials for removal must be conducted within restricted areas by certified asbestos Workers.

D. Alterations to the abatement procedures outlined in this specification shall be allowed if approval is obtained from the Owner's Representative and/or a variance from ICR 56 is granted by the NYSDOL. The Contractor must follow the owner's representative's conditions as well as all variance conditions if alterations to abatement procedures are approved.

E. Should the area beyond the Work area(s) become contaminated with asbestos-containing materials, immediately stop Work and institute emergency procedures. Contaminated non-Work areas shall be isolated and decontaminated in accordance with procedures established for asbestos removal. All costs incurred in decontaminating such non-Work areas and the contents thereof shall be borne by the Contractor, at no additional cost to the Owner. Abatement Work shall not continue in the Work area until a satisfactory visual inspection performed by the Project Supervisor and Project Monitor has been performed to ensure non-Work areas are properly decontaminated. Results of this inspection shall be noted in the Project Supervisors log book.

F. Negative pressure tent enclosures for Minor-size Work areas shall be sized by the Contractor to fit the necessary air sampling equipment. Minimum dimensions for tent enclosures shall be six feet by three feet by three feet.

3.2 REMOVAL OF ASBESTOS-CONTAINING MATERIALS

A. The Contractor shall remove asbestos-containing materials using wet methods in accordance with the Contract Documents and the approved Asbestos Work Plan.

3.3 ROOF AND WINDOW REMOVALS

A. The Contractor is required to provide temporary weather protection at the end of each Work shift to prevent water infiltration into the building and shall maintain until the permanent building has been restored. Weather protection shall not be installed until a successful Project Monitor Visual Inspection is completed.

B. If water leaks through containment areas or results from improper weather/security protection, the contractor shall be responsible for all water damage.

3.4 RESTORATION OF UTILITIES, FIRE STOPPING, AND FINISHES

A. After final visual inspection remove locks and restore electrical and HVAC systems. All temporary power shall be disconnected, power lockouts removed and power restored. All temporary plumbing shall be removed.

B. Finishes damaged by asbestos abatement activities including, but not limited to damage due to duct tape and spray adhesives, shall be restored prior to final payment.
   1. Finishes unable to be restored shall be replaced under this Contract.
   2. All foam and expandable foam products and materials used to seal Work Area openings shall be completely removed upon completion of abatement activities.

C. All penetrations (including, but not limited to, pipes, ducts, etc.) through fire-rated construction shall be fire stopped using materials and systems tested in accordance with ASTM E814 on projects where re-insulation is part of the required Work.

3.5 DISPOSAL OF ASBESTOS WASTE

A. All asbestos waste shall be stored, transported and disposed of in accordance with the following regulations as a minimum.
   1. NYS DEC 6 NYCRR Part 360 and 364.
   2. US EPA Asbestos Waste Management Guidance EPA/530-SW85.

3.6 TRANSPORTATION AND DISPOSAL SITE

A. The Contractor's Hauler and Disposal Site shall be approved by the Owner.

B. The Hauler, with the Contractor and the Owner’s Representative, shall inspect all material in the transport container prior to taking possession and signing the Asbestos Waste Manifests.

C. Unless specifically approved by the Owner, the Contractor shall not permit any off-site transfers of the waste or allow the waste to be transported or combined with any other off-site asbestos material. The Hauler must travel directly to the disposal site with no unauthorized stops.

D. Final Project payment shall not be approved until the waste shipment record is returned to the building owner.

3.7 WASTE STORAGE CONTAINERS

A. All waste containers utilized for exterior removals shall be open top and lockable (i.e. open dumpster with canvas cover, etc.). Open top containers not removed from site daily shall be covered at the end of each Work shift.

B. All waste containers utilized for interior removals shall be fully enclosed and lockable (i.e. enclosed dumpster, trailer, etc.). Open containers will be not be permitted (i.e. open dumpster with canvas cover, etc.) for interior removal waste unless specifically permitted by a site specific variance.

C. The Owner's Representative shall verify that the waste storage container tags (license plates) match that listed on the New York State Department of Environmental Conservation Part 364 permit. Any container not listed on the permit shall be removed from the site immediately

D. While on-site, all four sides of the container shall be labeled with EPA Danger signage:

DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST

E. The New York State Department of Environmental Conservation Asbestos Hauler's Permit number shall be stenciled on both sides and back of the container.

F. The container is not permitted to be loaded unless it has the appropriate danger signage affixed, and has the permit number appropriately stenciled on the container.

G. The waste container(s) shall be located on site in such a location that the waste can be deposited by hand or sealed construction chute directly from the roof to the waste container(s). ACM shall not be dropped from a height greater than 8 feet to the waste container(s).

H. The waste shall be removed from site no later than ten (10) calendar days from Project completion. Delay in removing waste from site may prevent the Contractor from obtaining the retainage withheld.

END OF SECTION 028200

SECTION 02 83 10 - LCP/LBP DISTURBANCES USING OSHA LEAD SAFE WORK PRACTICES

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The work covered by this Specification shall consist of furnishing all labor, materials, tools, and equipment necessary to control and mitigate potential lead-based paint (LBP) and lead-containing paint (LCP) material hazards during demolition/renovation activities pertaining to the project at SUNY Binghamton – Replace Storefront and Exterior Doors, Binghamton, New York.

This Specification shall be used as a guideline for Contractors who complete the demolition/renovation activities pertaining to this Project**,** as detailed within Section 1.01, B of this Specification. The intent of this Specification is to remain in conformance with Occupational Safety and Health Administration (OSHA) Regulation 29 CFR 1926.62 "Lead Exposure in Construction" and to maintain an airborne concentration of lead-dust below the Action Level. This Specification is written to outline the worst-case scenario regarding lead safe work practices.

B. Manual demolition, scraping and sanding of lead-based paint or lead containing paint coated surfaces, power tool cleaning with dust collection systems shall be performed in conjunction with engineering and work practice controls meeting the requirements of 29 CFR 1926.62(e)(1).

C. Components with LBP and LCP shall be removed intact to the extent practicable. A 6-mil polyethylene drop cloth shall be placed around and/or beneath the component, prior to its removal, to catch any paint chips that may become dislodged. Intact components shall be wrapped in a layer of clear 6-mil polyethylene prior to movement to the disposal container. The area around the component removal shall be wet wiped and high-efficiency particulate air (HEPA) filter vacuumed, including the tent enclosure (if applicable). The polyethylene sheeting shall be carefully folded in on itself and placed in a 6-mil disposal bag and sealed closed. All debris shall be properly disposed of in accordance with the respective waste stream Resource Conservation Recovery Act (RCRA) Toxicity Characteristic Leaching Procedure (TCLP) testing results.

D. Chemical stripping may be used for LBP and LCP removal on surfaces that will be subjected to welding, cutting, torch burning or where it is the only acceptable procedure. No chemical strippers containing methylene chloride shall be used by the Contractor on this project. SDS for stripping and neutralizing chemicals must be reviewed and approved by the Consultant prior to use and a copy shall be posted at the site.

E. The Contractor's use of a subcontractor (must be approved) shall not relieve the Contractor of full responsibility for the work to be performed.

F. If available and approved by the Competent Person, the Contractor may utilize exposure assessment data that is compliant with OSHA and was obtained within the last twelve (12) months from previous jobs conducted under similar conditions, control methods, work practices and environmental conditions to be used in this contract for LCP disturbances only. Other objective data may be used to demonstrate that work activities in this contract will not result in occupational exposures to airborne lead that exceeds the PEL for LCP disturbances only. The assessment shall include comparable lead concentrations (LCP only) in paint/coating materials, work practices, engineering controls and work schedules.

G. The Contractor must provide to his workers the following: Respiratory protection in accordance with the Contractor's Respiratory Protection Program, personal protective clothing, lead-free change areas, hand washing/shower facilities, blood lead level monitoring and training per 29 CFR 1926.62. **Respiratory Protection is required for all LBP disturbances**.

H. The Contractor shall ensure that any HVAC equipment intakes within and around the control areas are protected by shutting down the units. The Contractor shall alter the size and extent of the isolation barriers as necessary due to weather conditions, functional space use and density of building occupants in the vicinity, as required.

1.02 DEFINITIONS, REGULATIONS & REFERENCE STANDARDS

A. Definitions (excerpted from 29 CFR 1926.62)

1. Action Level**:** Employee exposure, without regard to the use of respirators, to an airborne lead concentration of 30 micrograms per cubic meter (30 ug/m^3) calculated as an 8-hour time-weighted average (TWA). Exceedance of the Action Level requires blood lead monitoring implementation.
2. Competent Person: One who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has the authorization to take prompt corrective measures to eliminate them. For LBP work, the Competent Person shall also be the on-site Supervisor/Foreman in-charge of the work crew.
3. Exposure Assessment**:** Each employer who has a workplace or operation covered by 29 CFR 1926.62 shall initially determine if any employee may be exposed to lead at or above the Action Level.
4. Lead: Metallic lead, all inorganic lead compounds, and organic lead soaps. Excluded from this definition are all other organic lead compounds.
5. Lead-Based Paint (LBP): Paint, varnish, shellac or other coatings on surfaces that contain 1.0 milligram per square centimeter (1.0 mg/cm^2) or more lead or 0.5% or more lead by weight. The concentration 0.5% is equivalent to:
   a. 5,000 parts per million (5,000 ppm) and;
   b. 5,000 milligrams per kilogram (5,000 mg/kg)
6. Lead-Containing Paint (LCP): Paint, varnish, shellac or other coatings on surfaces that contain measurable concentrations less than 1.0 milligrams per square centimeter (1.0 mg/cm^2) lead or less than 0.5% or more lead by weight including equivalents less than 5,000 ppm and 5,000 mg/kg. This does not include paint, varnish, shellac or other coatings on surfaces where the concentration is below the detection limit of the respective laboratory method / device.
7. LBP Inspection: A surface by surface investigation to determine the presence of LBP. A report is then issued that identifies if there is LBP present and where it is located.
8. Lead Risk Assessor: EPA trained and certified to conduct LBP inspections and collect samples for the presence of lead in air, dust and soil for the purposes of abatement clearance testing as well as conduct risk assessments.
9. Permissible Exposure Limit (PEL): The limit above which the employer shall not expose workers to lead. The current PEL for lead is 50 ug/m^3 over an eight-hour time-weighted-average for all employees covered.

B. General Requirements

The Contractor is required to perform all work related to this project in strict accordance with all applicable Federal, State and Local regulations.

Where these requirements vary, the most stringent shall apply.

C. Specific Requirements

1. American National Standards Institute (ANSI)
ANSI Z9.2-79 – Fundamentals Governing the Design and Operation of Local Exhaust Systems.

2. Z88.2-80 – Practice for Respiratory Protection.

3. Code of Federal Regulations (CFR)

4. 29 CFR Part 1910.120 – Hazardous Waste Operations and Emergency Response.

5. 29 CFR Part 1910.134 – Respiratory Protection.

6. 29 CFR Part 1910.146 – Confined Space Entry Program.

7. 29 CFR Part 1910.1025 – Lead (General Industry Standard).

8. 29 CFR Part 1910.1200 – Hazard Communication.

9. 29 CFR Part 1926.55 – Gases, Vapors, Fumes, Dusts and Mists.

10. 29 CFR Part 1926.57 – Ventilation.

11. 29 CFR Part 1926.62 – Lead (Construction Industry Standard).

12. 40 CFR Part 260 – Hazardous Waste Management Systems: General.

13. 40 CFR Part 261 – Identification and Listing of Hazardous Waste.

14. 40 CFR Part 262 – Generators of Hazardous Wastes.

15. 40 CFR Part 263 – Transporters of Hazardous Waste.

16. 40 CFR Part 264 – Owners and Operators of Hazardous Waste Treatment, Storage & Disposal Facilities.

17. 40 CFR Part 265 – Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage & Disposal Facilities.

18. 40 CFR Part 268 – Land Disposal Restrictions.

19. 40 CFR Part 745 – Lead; Requirements for Lead-Based Paint Activities in Child Occupied Facilities

20. 49 CFR Parts 170-178 – Department of Transportation Regulations.

21. New York Codes of Rules and Regulations (NYCRR)
    a. 6 NYCRR Part 360 – Solid Waste Regulations.
    b. 6 NYCRR Part 364 – Waste Transporter Permits.
    c. 6 NYCRR Part 370-373 – Hazardous Waste Regulations.
22. Steel Structures Painting Council (SSPC)
    a. SSPC-Guide 6 – Guide for Containing Debris Generated During Paint Removal Operations.
    b. SSPC-Guide 7 – Guide for the Disposal of Lead-Contaminated Surface Preparation Debris.
23. Underwriters Laboratories. Inc. (UL)
    a. UL 586 – High Efficiency, Particulate Air Filter Units.

1.03 QUALITY ASSURANCE

The Contractor's Competent Person is required to maintain a copy of the following documents on-site:

A. Qualifications
1. Contractor: Documentation that the Contractor has prior experience on LBP and LCP activity projects similar in nature and extent to ensure the capability to perform the required work procedures in a satisfactory manner.
2. Competent Person: Certification that the Contractor's full-time on-site Competent Person meets the Competent Person requirements of 29 CFR Part 1926.62 and is experienced in administration and supervision of LBP and LCP activity projects, including work practices, protective measures for building and personnel, disposal procedures, etc. The Competent Person shall also be the project Supervisor.
3. Contractor's Testing Laboratory: Documentation that the laboratory performing the OSHA personal sample analysis is an EPA National Lead Laboratory Accreditation Program (NLLAP) accredited laboratory and that it is listed proficient in the NIOSH/EPA Environmental Lead Proficiency Analytical Testing Program (ELPAT), and is a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory. Certification shall include accreditation for heavy metal analysis, and a Quality Assurance and Quality Control Program. Currently, the American Association for Laboratory Accreditation (ASLA) and the American Industrial Hygiene Association (AIHA) are the EPA recognized laboratory accreditors. Documentation shall include the date of accreditation or reaccreditation.
4. Blood Lead Testing Laboratory: Adequate documentation that the laboratory is certified to perform blood lead analysis for the State where the work site is located.

B. Respiratory Protection Devices

Manufacturer's NIOSH certification for respiratory protection devices utilized on the site.

C. Cartridges, Filters, and Vacuum Systems

Manufacturer's NIOSH certification of approval of respirator cartridges (organic vapor, acid gas, mist, dust, high efficiency particulate); High Efficiency Particulate Air (HEPA) filtration capabilities for all cartridges, filters, and HEPA vacuum systems.

D. Medical Examination and Records

1. Certification that employees who are involved in LBP and LCP work have received medical examinations and will receive continued medical surveillance, including blood lead level monitoring, as required by 29 CFR Part 1926.62, 29 CFR Part 910.1200, 29 CFR Part 1910.120 and by the state and local regulations pertaining to such work. Records shall be retained, at Contractor expense, in accordance with 29 CFR Part 1910.20.

2. Provide medical surveillance to workers until exposure monitoring reveals that workers are not exposed to airborne lead at or above the Action Level of 30 ug/m^3. This consists of a blood test measuring the level of lead and zinc protoporphyrin by a licensed physician. Further testing and medical exams may be necessary depending on the results of initial blood tests and/or the initial exposure assessment.

E. Training

Training certification shall be maintained and posted at the site, prior to the start of work involving LBP and LCP work, for all of the Contractors' workers, supervisors and Competent Person. Training shall meet the requirements of 29 CFR Part 1926.62, 29 CFR Part 1926.59, 29 CFR Part 1910.1200 and 49 CFR 172. Training shall be provided prior to the time of job assignment and as required by the regulations thereafter. The project specific training shall, at a minimum, include the following.

1. Lead Paint Awareness Training as per 29 CFR 1926.62.
2. Specific nature of the operation, which could result in exposure to lead.
3. Purpose, proper selection, fitting, use and limitations of respirators.
4. Purpose and description of the medical surveillance program and the medical removal protection program, including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females, hazards to the fetus and additional precautions for employees who are pregnant).
5. Relevant engineering controls and good work practices.
6. The contents of any compliance plan in effect.
7. Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician.
8. The employee's right of access to records under 29 CFR part 1910.20.

F. Respiratory Protection Program

1. Furnish each employee required to wear a negative pressure respirator or other appropriate type with a respirator fit test at the time of initial fitting and at least every 12 months thereafter as required by 29 CFR Part1910.134 and 29 CFR Part 1926.62.
2. Establish and implement a respiratory protection program as required by ANSI Z88.2, 29 CFR Part 1910.134 and 29 CFR Part 1926.62.
3. All workers are required to don respirator(s) with the appropriate level of protection commensurate with the airborne concentrations of lead in which they are working. The

level of protection will be determined by the Contractor, based on objective air monitoring data.

1.04 ON-SITE SUBMITTALS

The Contractor's Competent Person is required to maintain a copy of the following documents on-site:

A. Certifications

Prior to the start of work, maintain the on-site, required certifications and licenses listed above in Section 1.03.

B. Equipment List

Maintain a list of equipment items to be used in the work, including brand names, model, capacity, performance characteristics, quantities, and other pertinent information.

C. LBP and LCP Safe Work Practice Compliance Plan

The contractor shall prepare a detailed LBP and LCP Safe Work Practice Compliance Plan that identifies the work procedures, health and safety measures to be used in LBP and LCP work procedures; and that addresses spill prevention, containment, and emergency response procedures. The Plan shall be maintained on-site. The plan shall address the methods to be undertaken during LBP and LCP disturbances to include all requirements of 1926.62(e)(2)(ii) including, but not limited to the following key elements:

1. LBP and LCP containment methods to control employee exposure to lead at or below the permissible exposure limit.
2. Training requirements as required by Federal, State, and Local regulations.
3. Unique problems associated with the LBP and LCP project.
4. Sketch of location and details of LBP and LCP control areas, decontamination procedures. Refer to the Standard Specification for the Identification and Disposal of Hazardous Waste 028600 for waste storage area requirements.
5. Eating, drinking, smoking, and rest room procedures.
6. Sequencing of LBP and LCP related work.
7. Personal protective equipment and respiratory protection program, including controls.
8. Engineering controls, containment structures and safety measures. Refer to 1.07, D of this Section for HEPA filtered negative air unit requirements, as applicable.
9. Worker exposure assessment procedures.
10. Work Practice controls.
11. Housekeeping.
12. Hygiene facilities and practice.
13. Medical surveillance, including medical removal procedures.
14. Sampling, testing and analytical methods for personal air sampling requirements of 29 CFR Part 1926.62. Procedures must include frequency, locations, sampling, and analytical methods to be used.

15. Contractor to include the segregation and minimization of lead waste streams from construction and demolition waste in their lead-based paint management plan.

16. Visual clearance log for each control area that is maintained by the Contractor's Competent Person.

D. Compliance Program

Contractor's Compliance Program prepared in accordance with 29 CFR Part 1926.62 (e) (2) shall be maintained on-site.

E. Sampling and Laboratory Analysis Reports

Maintain on-site all field sampling logs for all personal air samples taken, including copies of laboratory analysis reports and chain of custody records for all sample analyses.

F. Competent Person certification per Sections 1.02 and 1.03.

1.05 CLOSEOUT SUBMITTALS: At the conclusion of the LBP/LCP project, the Contractor shall provide the following closeout submittals:

1. Refer to Standard Specification for the Identification and Disposal of Hazardous Waste 02 86 00 for closeout document requirements related to the disposal of hazardous waste, if applicable.
2. Submit copies of all "Visual Clearance Logs" to the Project Manager for owner's reference.
3. Signed Certification from the Contractor's Competent Person that all required documentation has been provided.

1.06 POSTED WARNINGS & NOTICES

The following regulations, warnings and notices shall be posted at the work site in accordance with 29 CFR Part 1926.62.

A. Regulations

A copy of applicable Federal, State, and Local regulations shall be maintained at the work site.

B. Warning Signs

Warning signs shall be provided at approaches to LBP/LCP control areas. Signs shall be located at a distance from the LBP and LCP control areas that will allow personnel to read the sign and take the necessary protective actions required before entering the LBP/LCP control area. The signs shall comply with the requirements of 29 CFR Part 1926.62.

C. Worker Information

Right-to-know notices shall be placed in clearly visible areas of the work site in compliance with Federal, State and Local regulations.

D. Exposure Air Monitoring Results

Exposure air monitoring results shall be prepared in order to be easily understood by the workers and shall be placed in a clearly visible area of the work site.

E. Emergency Telephone Numbers

A list of telephone numbers shall be posted at the site. The list shall include numbers of the local hospital, emergency squad, police and fire departments, Government and Contractor representatives who can be reached 24 hours per day as well as professional consultants directly involved in the project.

1.07 EQUIPMENT & MATERIALS

Sufficient quantities of health and safety materials required by 29 CFR Part 1926.62, and other materials and equipment needed to complete the project, shall be available and kept on the site.

A. Respirators

Air-purifying respirators shall be approved by NIOSH for use with dust, fumes and mists having permissible exposure limits less than 0.05 milligrams per cubic meter (i.e. have high-efficiency particulate air [HEPA] filters) and for other hazardous airborne contaminants that may be encountered, as determined by the Competent Person. The Contractor shall furnish, at no cost to personnel/employees, respirators to provide protection from airborne concentrations of lead. Respirators shall comply with the requirements of 29 CFR Part 1926.62 and shall be used in accordance with 29 CFR Part 1926.62, 29 CFR Part 1926.103 and 29 CFR Part 1910.134.

B. Respirator Cartridges

A sufficient supply of respirator cartridges shall be maintained at the work site to provide new cartridges to employees and authorized visitors throughout the duration of the project. Cartridges shall be replaced according to the manufacturer’s recommendations, when breathing becomes difficult, or if the cartridges become wet.

C. Protective Clothing

1. The Contractor shall furnish, at no cost to personnel/employee, equipment/ clothing for protection from airborne and waterborne LBP and LCP debris. An adequate supply of these items shall be available for worker and authorized visitor use. Workers and visitors shall not take protective clothing and equipment off the work site at any time. Protective clothing includes:

   a. Coveralls (Whole Body Protective Coverings): Full-body coveralls and head covers shall be worn by workers in the control area as necessary. Sleeves shall be secured at the wrist and pants legs at the ankle with tape. Permeable clothing shall be provided in heat-stress conditions. Where non-disposable coveralls are provided, these coveralls shall be cleaned after each wearing and kept within the control area or decon/airlock (bagged). Cleaning of coveralls and other non-disposable clothing shall be in accordance with the provisions for cleaning in 29 CFR Part 1926.62.

   b. Boots: Work boots with nonskid soles or impermeable work boot covers shall be worn by workers. Where required by OSHA, safety boots (steel toe or steel toe and shank) shall be worn. Paint the uppers of boots red with waterproof enamel. Do not allow boots to be removed from the control area for any reason after being contaminated with LBP or LCP debris. Keep within control area or decon/airlock (bagged).

c. Gloves: Inner gloves, appropriate for items and hazards encountered, and disposable outer work gloves shall be provided to each worker and shall be worn while the worker is in the control area. Glove material shall be appropriate for the specific chemical exposure. Gloves shall not be removed from the control area and shall be disposed of as LBP or LCP contaminated waste at the end of the work.

d. Hard Hats: Head protection (hard hats) shall be provided as required by OSHA for workers and authorized visitors. Protective plastic-strap suspension hats shall be used. Hard hats shall be worn at all times when work is in progress. Hard hats shall remain in the control area until the project is completed. Hard hats shall be thoroughly cleaned, decontaminated, dried and bagged before being removed from the control area at the end of the project.

e. Eye Protection: Fog-proof goggles for personnel engaged in LBP and LCP operations shall be worn when the use of a full-face piece respirator is not required and kept within control area or decon/airlock (bagged) until completion of project.

D. Negative Air Pressure System

When a LBP or LCP control area requires the use of an airtight containment barrier, a negative air pressure system shall be used and pressure differential recordings taken. LBP and LCP shall not be removed from the LBP/LCP control area until the proper engineering controls and HEPA filtration systems are in place.

1. HEPA Filter Requirements

The negative air pressure system shall be equipped with approved HEPA filters per UL 586. Negative air pressure equipment shall be equipped with new HEPA filters, and shall be sufficient to maintain a minimum pressure differential of minus 5 Pascals (Pa), equivalent to 0.02 inch of water column relative to adjacent, unsealed areas. Negative air pressure system minimum requirements are listed below.

a. The unit shall be capable of delivering its rated volume of air with a clean first stage filter, an intermediate filter and a primary HEPA filter in place. The units shall be clean and sealed (intake & exhaust) at all times when not operating in a control area.

b. The HEPA filter shall be certified as being capable of removing particles as small as 0.3 micrometers at a minimum efficiency of 99.97 percent. 700 hours is the manufacturer life recommendation of a HEPA filter (approximately 1 month of continuous operating).

c. The unit shall be capable of continuing to deliver no less than 70 percent of rated capacity when the HEPA filter is 70 percent full or measures 620 Pa (2.5 inches of water) static pressure differential on a magnehelic gauge.

d. The unit shall be equipped with a manometer-type negative pressure differential monitor with minor scale division of 0.02 inch of water and accuracy within plus or minus 1.0 percent. The manometer shall be calibrated in accordance with the manufacturer’s recommendations. Record manually manometer readings of the pressure differential between the LBP control area and adjacent unsealed areas at the beginning and end of each work day.

e. The unit shall be equipped with a means for the operator to easily interpret the readings in terms of the volumetric flow rate of air per minute moving through the machine at any given moment.

f. The unit shall be equipped with an electronic mechanism that automatically shuts the machine off in the event of a filter breech or absence of a filter.

g. The unit shall be equipped with an audible horn that sounds an alarm when the machine has shut itself off.

h. The unit shall be equipped with an automatic safety mechanism that prevents a worker from improperly inserting the main HEPA filter.

i. The unit shall be ducted through the containment barrier wall to the exterior of the building. The unit shall not be exhausted into any interior areas. If exhausting to the exterior is not feasible, utilize an unoccupied area or room that is large enough to handle the volume of air with two units connected in series. Applicable warning signage shall be posted at this location. prior approval is required if exhausting into the interior of the building.

2. Number of Units Required

The air within the containment barrier shall be changed at least once every 15 minutes by a continuously operating negative air pressure system, until the LBP/LCP control area barrier is removed. Filters shall be replaced as necessary to maintain the efficiency of the system. A back-up unit shall be maintained on-site.

3. Auxiliary Generator

If site conditions can't provide power, an auxiliary generator shall be provided. The generator shall not present a carbon monoxide hazard to workers.

4. Discontinuing Negative Air Pressure System

The negative air pressure system shall not be shut down during LBP/LCP work unless authorized by the 's third-party environmental consultant. At the completion of the LBP/LCP work procedures and disposal project, units shall be run until removal is completed satisfactorily and full cleanup has been completed and satisfactory clearance has been achieved. Dismantling of the negative air pressure systems shall conform to the written decontamination procedures. Prefilters shall be removed and properly disposed. The intake and exhaust of the machines shall be sealed with polyethylene to prevent environmental contamination.

E. Expendable Materials

1. Polyethylene Sheet and Bags - General

Polyethylene sheet and bags shall be minimum 6-mil thick. Bags shall have pre-printed labels, and 5-inch (minimum) long plastic ties, pointed and looped to secure the filled bags. Polyethylene sheets shall be in roll sizes to minimize seams.

2. Polyethylene Sheet - Flame Resistant

Where a potential for fire exists, flame-resistant polyethylene sheets shall be provided. Polyethylene film shall conform to the requirements of NFPA 701.

3. Polyethylene Sheet - Reinforced

Reinforced polyethylene sheet shall be provided where high skin strength is required such as where it constitutes the only barrier between the LBP control area and the indoor and outdoor environments. The sheet stock shall consist of translucent, nylon-reinforced or woven-polyethylene thread laminated between two layers of polyethylene film. Film shall meet flame resistant standards of NFPA 701.

4. Tape and Adhesive Spray

Tape and adhesive shall be capable of sealing joints between polyethylene sheets and for attachment of polyethylene sheets to adjacent surfaces. After dry application, tape or adhesive shall retain adhesion when exposed to wet conditions, including amended water. Tape shall be minimum 2 inches wide, industrial strength.

5. Containers

DOT approved impermeable containers shall be used to receive and retain LBP and LCP waste and debris and lead contaminated material until disposal. Containers shall be labeled in accordance with EPA, DOT and OSHA standards, as applicable for the type of waste. Waste streams shall be segregated in a manner to reduce the potential volume of hazardous waste generated.

6. Chemicals

Chemicals, including caustics and paint strippers, shall be properly labeled, stored in leak-tight containers and properly/safely secured from the general public.

F. Vacuum Systems

HEPA filtered vacuum systems shall be used during LBP/LCP operations which generate dust. The systems shall be suitably sized for the project, and filters shall be capable of removing particles as small as 0.3 micrometers at a minimum efficiency of 99.97 percent. Vacuum opening, wands and hoses shall be sealed at all times when not in a control area.

G. Chemical Paint Strippers

Chemical paint strippers shall contain no methylene chloride.

H. Chemical Paint Stripper Neutralizer

Neutralizers for paint strippers shall be compatible with the substrate and suitable for use with the chemical stripper that has been applied to the surface.

I. Storage of Materials

Materials shall be stored in an approved enclosed structure, which protects them from damage, rain, wind, etc. and contamination. During periods of cold weather, plastic materials shall be protected from the cold. Regularly inspect materials to identify damaged or deteriorating items. Damaged or deteriorated items shall not be used and shall be removed from the site as soon as they are discovered. Stored materials shall not present a hazard or an inconvenience to workers, visitors, employees and/or other building occupants.

PART 2 – EXECUTION

2.01 WORK PROCEDURES

LBP and LCP work procedures and related work shall be performed in accordance with the accepted Contractor's LBP and LCP Safe Work Practice Compliance Plan, 29 CFR Part 1926.62 and as specified herein. LBP/LCP waste and debris, lead contaminated debris and personal protective clothing and equipment shall be disposed of in compliance with Federal, State, and Local regulations and in accordance with the respective waste stream TCLP testing results.

A. Personal Protection Procedures

Respiratory Protection is required for all LBP disturbances. Personnel shall wear and use protective clothing and equipment as specified and required by 29 CFR Part 1926.62 and 29 CFR Part 1910.120. Eating, smoking, drinking, chewing tobacco, chewing gum, applying makeup and use of non-work-related walkie-talkies/phones shall not be permitted in the LBP and LCP control area. Personnel of trades not engaged in the LBP or LCP work procedures and disposal of LBP and LCP shall not be exposed at any time to airborne concentrations of lead equal to or in excess of 30 micrograms per cubic meter of air (30 ug/m^3). Electrical service shall be disconnected when wet removal is performed, and temporary electrical service protected by a ground fault circuit interrupter (GFCI) shall be provided.

B. Safety and Health Procedures

The Competent Person shall be present on the work site throughout the LBP and LCP project to supervise, monitor and document the project's health and safety provisions. A daily log shall be maintained showing the results of air sampling tests throughout the project area. LBP and LCP work being conducted within a LBP or LCP control area where an airtight barrier is required shall be stopped if measured airborne lead concentrations, collected during LBP or LCP work procedures, exceed the Action Level.

C. Safety and Health Responsibilities

The Competent Person shall:

1. Verify that training meets applicable requirements.
2. Review and approve LBP/LCP Safe Work Practice Compliance Plan for conformance to the applicable referenced standards.
3. Inspect LBP and LCP removal work for conformance with the accepted Safe Work Practice Compliance Plan.
4. Ensure that worker exposure air monitoring activities are in accordance with 29 CFR Part 1926.62.
5. Ensure work is performed in strict accordance with specifications.
6. Ensure hazardous exposure to personnel and to the environment are adequately controlled.
7. The Contractor's Competent Person shall be responsible for directing personal air monitoring and shall also perform visual inspections prior to the visual inspection conducted by 's third-Party Environmental Consultant (if applicable), to verify the control areas are free of all visible debris.
8. If required, the Contractor's Competent Person shall coordinate with and the 's third-party environmental consultant for any control areas requiring final air/wipe testing

clearance testing (Action Level/wipe) in accordance with OSHA and/or US Department of Housing and Urban Development (HUD) protocols.

D. Medical Surveillance Procedures

Medical surveillance shall be implemented in accordance with the accepted Contractor's LBP/LCP Safe Work Practice Compliance Plan and shall comply with the requirements of 29 CFR Part 1926.62, including the provisions for blood lead level monitoring, medical removal, protection and a physician's written opinion, signed by the physician performing the employee examination. The Contractor's Competent Person shall maintain on-site, a copy of the written opinion for Contractor's employees prior to each employee's commencement of work.

E. Engineering Controls and Containment Structures

Engineering and work practice controls are the primary means of maintaining exposures to lead below the PEL. Paint removal and surface preparation activities must keep dust levels at a minimum. Power tools must be equipped with manufacturer equipped vacuum shrouds including an attached HEPA filtered vacuum system.

1. LBP/LCP Control Area

The control area is where LBP/LCP work procedures occur and as such shall be considered contaminated. The LBP/LCP control area shall be isolated to prevent LBP/LCP containing dust or debris from passing into adjacent areas. The control area shall be decontaminated at the completion of the LBP/LCP work procedures and disposal work.

2. Boundary Requirements.

Physical boundaries along with Warning Signage shall be provided around exterior LBP/LCP control areas by taping off the area indicated in the Safe Work Practice Compliance Plan.

3. Control Barriers

The LBP/LCP control area shall be designated and separated from other outside areas with control barriers. The polyethylene sheeting shall mask and seal all openings. The LBP/LCP control area shall be erected according to the Contractors LBP/LCP Safe Work Practice Compliance Plan. Polyethylene sheeting shall be mechanically supported, independent of duct tape or spray adhesive.

4. Exterior Masking and Sealing

Exterior LBP/LCP control area requirements: Where the construction of a contained LBP/LCP control area is impractical or not required based on the method of lead work procedures, a taped-off perimeter shall be installed around the area where the LBP/LCP handling procedures are performed and other requirements for LBP/LCP control areas shall be maintained. Personal monitoring of airborne concentrations is still required and shall be conducted in accordance with 29 CFR Part 1926.62.

5. Hand Wash Station

An operational hand washing station shall be provided to all workers adjacent to each LBP/LCP control area utilizing polyethylene sheeting as a drop cloth. Water shall be hot and cold or warm. Soap dish, continuing supply of soap, and clean towels shall be provided. The hand wash station shall be maintained in a sanitary condition. Waste water shall be collected and placed within 6-mil polyethylene bags and sealed. Bags shall be immediately placed within non-leaking, drums and sealed.

6. Equipment Decontamination

An equipment decontamination area shall be installed at the entrance to each LBP/LCP control area to allow for the cleaning of all equipment utilized on the project. Polyethylene sheeting shall be utilized as a drop cloth, along with a utility tub to clean and capture debris/water during the cleaning process. Water shall be hot and cold or warm. Continuing supply of detergent, and clean towels shall be provided. The equipment decontamination area shall be maintained in a sanitary condition. Waste water shall be collected and placed within 6-mil polyethylene bags and sealed. Bags shall be immediately placed within non-leaking, drums and sealed.

F. Temporary Utilities

1. Temporary equipment as necessary to provide adequate power, light, heat, and water shall be installed, as needed, to accomplish the LBP/LCP operations properly and safely. The Contractor shall maintain the security and maintenance of the utility system in the LBP/LCP control areas. In the event of a failure of any utility system, the Owner will not be responsible for any loss of time or other expense incurred by the Contractor. In addition to any site-specific temporary utility requirements, the Contractor shall provide:

   a. Back-flow protection on all water connections. Fittings installed by the Contractor shall be removed after completion of work with no damage or alteration to existing water piping and equipment.

   b. When applicable, heavy-duty abrasion-resistant hoses to provide water to each control area and decontamination area.

   c. A hot water heater, if necessary, to provide warm water to the decontamination showers, hand wash station and equipment decontamination area.

   d. Electrical service to control areas. Electrical service shall comply with National Electric Code, State and Local requirements and UL standards. Warning signs shall be posted at power outlets, which are other than 110-120 volt power. Only grounded extension cords connected into a GFCI shall be used. Incandescent lamps and light fixtures shall be of adequate wattage to provide good illumination in LBP/LCP control areas.

   e. Temporary heating units, when needed, that have been tested and labeled by UL, FM, or another recognized trade association related to the fuel being consumed. Forced air or fan type units shall not be utilized inside a control area. Units shall have tip-over protection.

2.02 LEAD-BASED/CONTAINING PAINT WORK PRACTICES (Use methods as applicable)

A. Component Removal:

Components shall be removed intact to the extent practicable. A 6-mil polyethylene drop cloth shall be placed around and/or beneath the component, prior to its removal, to catch any paint chips that may become dislodged. The component shall be wrapped and sealed in a layer of clear 6-mil polyethylene prior to movement to the disposal container. Follow proper disposal requirements. The area around the component removal shall be wet wiped and HEPA vacuumed. The polyethylene sheeting shall be carefully folded in on itself and placed in a 6-mil disposal bag. Containment debris shall be properly stored of in accordance with respective waste stream as per the Contractor’s LBP/LCP Safe Work Practice Compliance Plan

B. Chemical Stripping:

Chemical stripping may be used for LBP and LCP removal on surfaces that will be subjected to welding, cutting, torch burning or where it is the only acceptable procedure. No chemical strippers or associated neutralizer chemicals containing methylene chloride shall be used by the Contractor on this project.

1. Horizontal surfaces directly below and in a radial direction from the area where chemical stripping is to be performed shall be covered with 6-mil plastic sheeting and shall also extend ten (10) feet on either side of the control area or to the furthest practical distance to catch any paint chips that may become dislodged.
2. All LBP/LCP on specified surfaces shall be removed to the bare substrate. The job is not considered complete until the substrate is dry, free of paint, debris, and LBP/LCP residue.
3. LBP/LCP stripping agents shall be brushed or troweled on the designated surfaces, or otherwise applied to a minimum thickness in accordance with manufacturer's specifications.
4. The required application/reaction time for stripping will depend upon the ambient temperature, humidity, and thickness of LBP/LCP. If LBP/LCP is not completely removed following the initial application of stripper, additional applications and wet scrapings may be required.
5. Removed LBP/LCP shall not be deposited on the polyethylene containment surfaces but shall be transferred directly into clear 6-mil polyethylene bags from the scraper and sealed. LBP/LCP shall be removed by wet scraping to the maximum extent feasible. If the substrate is to be reused, the removal activities shall not damage the substrate.
6. Any residue not removable by wet scraping shall be washed down to the bare metal substrate with an appropriate, pre-approved solution. LBP/LCP-contaminated wastewater shall be kept to a minimum using wet scrub brushes or sponges. These residues and disposable cleaning media shall also be directly transferred to 6-mil polyethylene bags and sealed. Bags shall be immediately placed within non-leaking, drums and sealed. Free standing water shall be eliminated by use of a drying agent. Contractor to include the segregation and minimization of lead waste from construction and demolition waste in their LBP/LCP Safe Work Practice Compliance Plan .

C. Manual Demolition/Scraping/Cleaning:

1. Manual demolition, scraping, sanding and power tool cleaning with dust collection systems shall be performed in conjunction with engineering and work practice controls meeting the requirements of 29 CFR 1926.62(e)(1).
2. Seal openings of HVAC ductwork and other penetrations (doors, windows, etc.) within the Control Area with two layers of 6-mil polyethylene sheeting. For work on vertical surfaces, place a layer of 6-mil polyethylene sheeting below the area prior to manual demolition/scraping/sanding/cleaning. The sheeting shall extend ten (10) feet on either side of the control area or to the furthest practical distance to catch any paint chips that may become dislodged.
3. Wet methods shall be used during manual scraping, sanding and power tool cleaning with dust collection systems. Local HEPA ventilation shall be utilized in conjunction

with manual scraping, sanding and power tool cleaning with dust collection systems. In the case that local HEPA ventilation is not sufficient to control dust hazards, the Contractor shall be required to install engineering controls to meet requirements of specification section 1.06, D., "Negative Air Pressure System".

4. Removed LBP/LCP shall not be allowed to accumulate on surfaces within the Control Area but shall be HEPA vacuumed or placed directly into 6-mil polyethylene bags. The Contractor shall maintain all surfaces as free as practicable of accumulated lead dust to prevent the dispersal of lead into the work places that are outside of the lead paint control areas. LBP/LCP shall be removed by manual methods to the maximum extent feasible.

5. Debris shall be bagged in 6-mil polyethylene bags, sealed, and secured in leak proof drums. The area around the surfaces subject to work shall be wet wiped and HEPA vacuumed, including the polyethylene sheeting. Upon a satisfactory clearance inspection by 's Third-Party Environmental Consultant (if applicable) and the Contractor's Competent Person, the cleaned polyethylene sheeting shall be carefully folded in on itself and placed in a 6-mil disposal bag. Containment debris shall be properly stored of in accordance with the respective waste stream as indicated in the contractor's LBP/LCP Safe Work Practice Compliance Plan . The contractor shall coordinate with the 's third-party environmental consultant to test the waste streams for disposal.

D. Alternative Lead Work Procedures

1. Any work procedure deviating from the outlined procedures above shall be submitted to Code Compliance and the Owner's third-party Environmental Consultant for review and approval prior to the start of the project. As there are many different components in different areas of the building(s), it is impractical to address every potential lead work procedure. The intent of alternative lead work procedures shall be to maintain compliance with 29 CFR 1926.62 and maintain airborne concentrations of lead dust below the Action Level of 30 ug/m^3.

2.03 PERSONAL AIR MONITORING, WASTE SAMPLING & CLEARANCE SAMPLING

During all LBP/LCP removal and disposal operations, the Contractor's OSHA Competent Person shall be on-site inspecting the work to ensure that the health and safety requirements of this contract are satisfied. may elect to have a Third-Party Environmental Consultant on-site to perform visual clearance inspections and/or clearance sampling.

A. Personal Air Monitoring (Provided by the Contractor, as necessary)

1. Personal air monitoring samples for airborne concentrations of lead shall be collected and analyzed in accordance with 29 CFR Part 1926.62. Results shall be reported in micrograms per cubic meter of air. The Competent Person shall use personal air monitoring results to determine the effectiveness of engineering controls, the adequacy of PPE and to determine if proper work practices are being employed. The 's third-party environmental consultant shall be notified if any personal air monitoring result meets or exceeds 30 ug/m^3 of air. The Contractor shall stop work and take steps to reduce the concentration of lead in the air. Such corrective actions shall be documented in the daily log. Personal air sampling results shall be verbally available within 24-hours of sampling with hard copy reports available within five (5) calendar days of sampling.

B. Waste Sampling and Testing (Provided by 's Third Party Environmental Consultant)

1. Sampling and testing of all waste streams, shall be in accordance with 40 CFR Part 261, 6 NYCRR Part 371 and SW-846, Chapter 9, Sampling Plan. See Paragraph 2.05 C. of this specification section for waste sampling and analyses requirements.

C. Dust/Wipe Sampling (If Required by , will be provided by 's Third Party Environmental Consultant).

1. Dust/wipe samples shall be taken after clean-up activities have been completed and the control areas passed a visual inspection. Refer to Section 2.01 C. 7. for visual inspection requirements.
2. Sampling for clearance criteria shall be performed in compliance with HUD Guidance document.
3. If clearance fails, the recleaning and any additional costs (dust/wipe sample analyses, etc.) to clear the control area shall be the responsibility of the Contractor. The control area shall remain in place until satisfactory clearance has been achieved.
4. Clearance Levels:
   a. Floors: 10 ug/ft^2
   b. Window Sills: 50 ug/ft^2
   c. Window Wells: 100 ug/ft^2

2.04 ADJACENT AREAS

Damage to adjacent areas shall be repaired by the Contractor to the approval of the Owner.

2.05 CLEAN-UP & DISPOSAL

A. Cleanup

1. Daily:
   Surfaces in the LBP/LCP control area shall be maintained free of accumulations of paint chips, LBP/LCP debris and dust. Spread of dust and debris shall be restricted; waste shall not be distributed over the control area. Dry sweeping or compressed air shall not be used for cleanup. At the end of each shift, the area shall be cleaned of visible lead paint contamination by vacuuming with a HEPA filtered vacuum cleaner and wet wiping the area. LBP/LCP work procedures shall cease during the cleanup.

2. At completion of LBP/LCP work and a satisfactory visual inspection by 's Third Party Environmental Consultant (if applicable) and OSHA Competent Person, a clean-up shall be performed by the Contractor. This clean-up includes removal of any contaminated material, equipment or debris including polyethylene sheeting from the control area. The polyethylene sheeting shall be sprayed or misted with water for dust control, construction debris removed and polyethylene sheeting wet wiped. Then the sheeting shall be removed by folding it in upon itself.
   a. Lead-contaminated debris shall be containerized in accordance with the Contractor's LBP/LCP Safe Work Practice Compliance Plan Waste bags shall not be overloaded and shall be securely sealed and stored in the designated area.

b. Removal of surface polyethylene sheeting shall begin from top to bottom. Removal of floor polyethylene sheeting shall begin at the corners and folded in the middle to contain the dust. Polyethylene shall be disposed of as per the Contractor's LBP/LCP Safe Work Practice Compliance Plan Cleaning Equipment. The Contractor shall decontaminate the lead abatement equipment and equipment used in the control area. The wastewater from cleaning shall be contained, sampled and disposed of as specified within Section 2.01 E. 6. and 2.02 B. 7 *and as per* contractor's LBP/LCP Safe Work Practice Compliance Plan.

B. Certification

1. The Contractor's Competent Person shall certify and sign within the log that the respiratory protection for the employees was adequate, the work procedures were performed in accordance with 29 CFR Part 1926.62 and that there was no visible accumulations of LBP/LCP paint/coating or dust on the worksite. Do not remove warning signs at the lead control area or roped-off boundary signs prior to the completion of the Competent Person's signed certification. If applicable, the Contractor's Competent Person's certification shall be forwarded to the Project Manager and the 's Third Party Environmental Consultant's for review prior to removing warning signs at the lead control area or roped-off boundary signs.

END OF SECTION 02831

SECTION 02 84 00 - PCB CAULK REMOVAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. A Limited Pre-Renovation Hazardous Materials Survey/Inspection Report including a PCB Caulk Survey at SUNY Binghamton University – University Union located at 4400 Vestal Parkway East, Binghamton, New York was prepared by Ravi Engineering & Land Surveying, P.C. (RE&LS), dated April 2025, and the architectural demolition plans, provided by QPK Design dated August 2, 2025 are available for reference.

1.2 RELATED CONTRACTORS

A. Abatement Contractor will advise all other contractors, subcontractors and trades of the presence of PCB-containing materials and coordinate Work accordingly.

1.3 SCOPE OF WORK

A. PCB testing was performed to identify PCB-containing caulks at SUNY Binghamton University – Bartle Library. Laboratory analytical results indicate caulk materials contain PCBs at a concentration greater than 50 parts per million (ppm). All contractors are responsible for making themselves and their employees aware of the presence, location and quantity of existing PCB-containing caulks, and to warn their employees of the potential dangers of disturbing PCB-containing materials. The requirements referenced in this specification shall apply to all disturbances of PCB-containing caulks. Additional information is found in the Hazardous Materials Inspection in Appendix A.

B. PCB non-remediation waste:

1. Debris generated from construction materials manufactured with PCBs with a concentration greater than 50 ppm as a result of building renovation and demolition projects shall be referenced hereafter as PCB bulk product waste.

C. PCB Abatement:

1. This PCB abatement Project will consist of the removal and disposal of the following PCB-containing materials under base bid work:

    1. Gray door caulk associated with entry door frames
    2. Light gray window caulk

D. The specifications are to be used in conjunction with the contract drawings for this project including the HM-100, HM-100-A, HM101-B, and HM-101-U. A copy of each shall be maintained at the job site at all times.

E. All Work under this contract shall be performed in strict conformance with applicable Federal, State and local rules, laws and regulations.

F. All Contractors shall be aware of all conditions of the Project and is responsible for verifying quantities and locations of all Work to be performed. Failure to do so shall not relieve the contractor of its obligations to furnish all labor and materials necessary to perform the Work.

G. The contractor shall furnish all labor, materials, services, employee training, permits, insurance, and equipment for the disturbance and/or removal of PCB bulk product waste.

H. All The Contractor will be responsible for performing all Work in strict accordance with the Project Documents and all governing codes, rules and regulations. Where conflicts occur between the Project Documents and applicable codes, rules and regulations, the more stringent shall apply.

I. When performing any tasks in Work areas that contain this product, the contractor is responsible for PPE (Personal Protective Equipment) for all Workers, in accordance with all applicable regulations.

J. Materials were not determined to contain PCBs above 50 parts per million (ppm)

1.4 SUBMITTALS

A. Pre-Abatement Submittals:

1. No Work shall begin until these submittals are returned with the Owner's representative No Exceptions Taken (NET) action stamp. The Contractor shall submit an electronic copy of the documents listed below:
   a. Remediation Plan – General practices and procedures to be followed.
   b. The Competent Person name.
   c. Current HAZWOPER certifications for all employees working on the project.
   d. Current respirator fit test.
   e. Proof of respiratory protection program 29 CFR 1910.134.
   f. Copy of Waste Transporter Permits/License.
   g. Copy of Hazardous Waste Manifest to be used.
   h. Copy of disposal facility license to accept and dispose of PCB waste stream.
   i. List of previous Work experience on similar jobs.
   j. OSHA violations received in the past 5 years.
   k. Approved laboratory certificate for required OSHA personal air sampling.
2. Equipment: The Abatement Contractor shall submit the Manufacturer's information on the following equipment:
   a. HEPA Vacuums
   b. Respirators (including filter cartridges)
   c. Protective Clothing
   d. Duct Tape
   e. Disposal Bags
3. Safety Data Sheets (SDS): The Abatement Contractor shall submit copies of SDS (MSDS will not be accepted) in compliance with the new GHS for each chemical or material used for projects including but not limited to:
   a. Encapsulants
   b. Remover/Solvents

c. Cleaner/Disinfectants

d. Surfactants

e. Spray Adhesive

4. Progress Schedule.

a. Show the complete sequence of abatement activities and the sequencing of Work within each building or building section.

B. Post Abatement Submittals: The Contractor shall submit electronic copies to the Owner and Consultant for review and approval.

a. The location and description of the project.

b. The amount of PCB caulks and contaminated building material that was abated.

c. The commencement and completion dates of the project.

d. The name and address of the deposit or waste disposal site or sites where the PCB waste material was deposited or disposal.

e. The name and address of any sites that were used for the interim storage of PCB waste materials prior to final deposit or disposal.

f. The name and address of any transporter(s) that were used to transport PCB waste material.

g. Copy of all waste disposal manifests, and disposal logs

1.5 APPLICABLE STANDARDS AND REGULATIONS

A. Applicable Federal Regulations; All Work done under this contract shall be in compliance with:

1. U.S. Environmental Protection Agency (USEPA) regulations under the Toxic Substances Control Act (TSCA) found in Title 40 of the Code of Federal Regulations (40 CFR) Part 761.

2. Occupational Safety and Health Administration (OSHA) 29 CFR 1926 for protection of Workers.

3. Transportation shall be in accordance with all Federal laws including the Federal Motor Carrier Safety Regulations found in 49 CFR, Parts 390, 391, 392, 393, 396, and 397 and the Hazardous Materials Transportation Regulations found in 49 CFR, Parts 100 through 199 as they apply to interstate highway transportation.

B. Applicable State Regulations; All Work done under this contract shall be in compliance with:

1. New York State Department of Environmental Conservation (NYSDEC) regulations found in 6 NYCRR Parts 370 through 376 defined as New York States hazardous waste management regulations.

2. Transportation shall be in accordance with Sections 14(f), 140(2), 211 and 212(a) of the State Transportation Law and Article 19-B of the State Vehicle and Traffic Law.

1.6 ENVIRONMENTAL TESTING

A. The Owner shall engage the services of a third party Environmental Consulting Firm who shall serve as the Owner's Representative in regard to the performance of the PCB Caulk Abatement Project and perform visual inspections for all Work areas to ensure completeness or removal and clean-up.

1.7 SPECIAL JOB CONDITIONS

A. Size, location, and quantities of all caulk must be field verified. Information given on the drawings and/or specifications is for general orientation and information only.

B. The Abatement Contractor shall have at least one English-speaking supervisor on the job site at all times while the Project is in progress.

C. The Abatement Contractor shall provide temporary protection, to keep the Work areas secure and weather tight at all times, during the performance of the contract Work. The Contractor shall be responsible for any damage caused by the installation and/or removal of the temporary protection.

D. The Abatement Contractor shall subcontract the services of professional waterproofing contractor to provide asbestos free sealant of all seams and/or joints where PCB caulks were removed.

E. The Contractor will be responsible for any damage resulting from improper storage of materials and accidental spills or releases.

PART 2 - PRODUCTS

2.1 PROTECTIVE CLOTHING

A. The Contractor shall provide personnel utilized during the Project with disposable protective whole body clothing, head coverings, gloves and foot coverings as well as provide disposable Nitrile gloves to protect hands. Cloth gloves may be worn inside the plastic or rubber for comfort, but shall not be used alone. Make sleeves secure at the wrists and make foot coverings secure at the ankles by the use of tape, or provide disposable coverings with elastic wrists or tops.

B. The Contractor shall provide sufficient quantities of protective clothing to assure a minimum of four (4) complete disposable outfits per day for each individual performing abatement Work.

C. Eye protection and hard hats shall be provided by the Contractor and made available for all personnel entering any Work Area.

D. The Contractor shall provide Authorized visitors with suitable protective clothing, headgear, eye protection, and footwear whenever they enter the Work Area.

2.2 SIGNS AND LABELS

A. Generator identification information shall be affixed to each PCB waste container indicating the following printed in indelible ink:

Generator Name: State University of New York

Facility Name: Binghamton University – Bartle Library

Facility Address: 4400 Vestal Parkway East, Binghamton, New York 13902

2.3 LADDERS/SCAFFOLDING/LIFTS

A. The Abatement Contractor shall provide all necessary ladders, scaffolding and/or aerial lifts to accomplish the Work of this Contract. The type, erection and use shall comply with all applicable OSHA construction industry standards.

B. The Abatement Contractor shall provide access as required by the Owner's Representative for the purposes of performing required inspections.

C. All ladders, scaffolds, and/or aerial lifts shall be inspected daily by the Competent Person.

D. The Abatement Contractor shall provide all necessary temporary protection for ground surfaces below all scaffolds and aerial lifts. Work using aerial lifts shall be performed in accordance with OSHA 29 CFR 1926.453. The Contractor shall be responsible for any damage caused by the installation, use, and/or removal of the temporary ground protection. All ground surfaces shall be returned to their pre-Work state.

E. The Abatement Contractor shall provide all safety equipment necessary for proper use of all ladders, scaffolds, and/or aerial lifts; and ensure employees are properly trained in their individual uses.

F. The Abatement Contractor shall coordinate all sidewalk and entry/exit closures with the Owner's Representative no less than 48 hours prior to closure.

2.4 DRUMS

A. Provide metal or fiberboard drums or equivalent storage containers for transportation and storage of PCB bulk product waste.

2.5 HEPA VACUUM EQUIPMENT

A. All vacuuming performed under this contract shall be performed with High Efficiency Particulate Air (HEPA) filter equipped industrial vacuums conforming to ANSI Z9.2.

B. Provide tools and specialized equipment including scraping nozzles with integral vacuum hoods connected to a HEPA vacuum with flexible hose.

C. Each HEPA equipped vacuum shall be equipped with a HEPA filter that has never been used or each HEPA equipped vacuum must be inspected and tested prior to being brought on site for the proper operation and performance of the HEPA filter. Inspection and testing shall be in accordance with the manufacturer's recommendations. Proof of inspection and testing for each HEPA equipped vacuum must be made available to the Owner or Owner's Representative upon request. Each HEPA equipped vacuum must be tagged with the date of the last HEPA filter change.

2.6 POWER TOOLS

A. Power tools used to drill, cut into, or otherwise disturb material shall be equipped with HEPA filtered local exhaust ventilation.

B. The use of variable speed oscillating multifunction power tools shall be allowed for exterior removals only. All other power tools used for the Work shall be approved by the Owner's Representative and the Consultant prior to use for the Work.

2.7 POLYETHYLENE SHEETING

A. All polyethylene (plastic) sheeting used on the Project (including but not limited to sheeting used for critical and isolation barriers, fixed objects, waste container) shall be at least 6-mil fire retardant sheeting.

PART 3 – EXECUTION

3.1 GENERAL

A. When Working with PCB caulk, Work practices shall be performed in a manner that minimizes or prevents airborne dust generation and release to adjacent areas. Debris shall be collected and area shall be wiped down to collect dusts in accordance with all applicable regulations. A double wash/rinse procedure shall be performed on porous building materials.

B. The Abatement Contractor shall maintain security in the building and Work areas at all times, for the duration of the Work including, but not limited to, interior tent enclosures, hygiene facilities and temporary waste storage sites.

C. The Abatement Contractor is responsible for OSHA personal air monitoring for PCB exposure for all workers.

D. The Abatement contractor shall use Work practices consistent with applicable regulations to protect Workers from exposure to PCB during demolition, modification, storage, and handling of PCB-containing materials.

E. The State University of New York shall be the generator of the waste, and shall supply its EPA I.D. number and address for use in filling out the manifests. The Abatement Contractor shall be responsible for the preparation of the manifest (information and tracking form) to be signed by all applicable parties. The Abatement Contractor shall allow two weeks for the Owner to review and sign the completed manifests. Submit copies of all pertinent Hazardous Waste Manifests to the Owner’s Representative and the Consultant.

F. The Owner will provide electrical and water utilities. The Abatement Contractor shall provide all necessary power cords, ground fault circuit interrupters, and water hoses necessary to access the Work area. All temporary power to the Work area shall be brought from outside the Work area through a ground fault circuit interrupter.

G. Under no circumstances shall contaminated wastewater be allowed to enter the storm or sanitary sewer systems.

H. Emergency and fire exits from the Work area shall be maintained according to all applicable codes. If emergency and fire exits must be closed to perform the Work, the contractor will coordinate any closures with the Owner no less than 2 Working days prior to closure to allow adequate building occupant notification.

3.2 INTERIOR WORK AREAS

A. This Work shall consist of furnishing and installing a restricted area around the immediate Work to isolate the area and limit access to non-authorized personnel during Work. Protective barriers will be placed over all entrances. This shall be achieved by erecting a two layer six-millimeter polyethylene tent enclosure to include walls, ceiling and a floor.

B. Tent enclosures shall be adequately sized, supported and reinforced to perform the Work. Each tent interior shall be segregated from non-Work areas by a curtained doorway consisting of 3 independent overlapping sheets of 6-millimeter polyethylene sheeting.

C. A HEPA-vacuum or other negative pressure HEPA-filtered ventilation equipment shall be installed to continually exhaust the tent during all interior removals.

D. The Abatement Contractor shall provide hygiene facilities adjacent to the Work area for Worker and tool decontamination. Hygiene facilities shall be installed as follows:

1. An impermeable drop cloth on the ground for a Worker decontamination area.
2. The area shall be equipped with a water spray bottle, towels, a wash bin to collect waste water, and a waste bag for disposable clothing and cleaning materials.
3. The Worker shall HEPA vacuum Work clothing and wet clean tools and waste bags before removing them from the restricted area.

E. Removals performed inside tent enclosure shall be performed using manual wet methods to minimize airborne dust generation.

F. PCB-containing materials shall be removed from their substrate substantially intact and immediately containerized for disposal. Excessive PCB-containing materials (one shovel full) shall not be allowed to accumulate on the floor of the tent and shall be containerized frequently.

G. Upon completion of bulk removal, the Abatement Contractor shall perform one thorough cleaning of the tent. The Abatement Contractor will then notify the Environmental Consultant to perform a visual inspection to confirm completeness of abatement and completeness of cleanup. Upon completion of a satisfactory visual inspection the tent enclosure may be dismantled.

H. Finishes damaged by PCB abatement activities including, but not limited to, plaster/paint damage due to duct tape and spray adhesives, and floor tile lifted due to wet or humid conditions, shall be restored prior to final payment.

3.2 EXTERIOR WORK AREAS

A. This Work shall consist of furnishing and installing a restricted area around the immediate Work to isolate the area and limit access to non-authorized personnel during Work. Protective barriers will be placed over all entrances. This may be achieved by erecting fencing or utilize barrier tap to restrict access.

B. An impermeable drop cloth below the immediate Work area shall be installed to contain and collect debris generated during the Work.

C. The Abatement Contractor shall provide hygiene facilities adjacent to the Work area for Worker and tool decontamination. Hygiene facilities shall be installed as follows:

1. An impermeable drop cloth on the ground for a Worker decontamination area.
2. The area shall be equipped with a water spray bottle, towels, a wash bin to collect waste water, and a waste bag for disposable clothing and cleaning materials.
3. The Worker shall HEPA vacuum Work clothing and wet clean tools and waste bags before removing them from the restricted area.

D. A variable speed oscillating multifunction power tool shall be utilized for exterior removals. All other power tools used for the Work shall be approved by the Owner’s Representative and the Environmental Consultant prior to use for the Work.

E. When aerial lifts are employed, the Working platform shall be covered in 2 layers of reinforced 6-mil polyethylene plastic sealed at the edges to collect any loose PCB material dislodged from the Work. Contractor must provide proper traction surfaces or equipment to assure the safety of the Workers.

F. Operable windows shall be sealed and ground covered with polyethylene plastic from exterior face of building to 10 feet away from exterior face or furthest point of gravity fall for material dislodged by removal techniques employed, whichever is further. Debris shall be collected and area shall be wiped down to collect dusts in accordance with all applicable regulations. A double wash/rinse procedure shall be performed on porous building materials.

G. PCB-containing materials shall be removed from their substrate substantially intact and immediately containerized for disposal. Excessive amounts of PCB-containing material (one shovel full) shall not accumulate on the drop cloth below the Work.

H. Inclement Weather: Removal operations shall be suspended at any time when satisfactory control of the overall operation cannot be maintained on account of rain, wind, lightning, or other unsatisfactory weather or ground conditions. Determination of such conditions should be made by the Abatement Contractor and the Owner's Representative. When such conditions exist, the Work area should be cleaned up immediately and Work suspended. High winds can disperse bulk material, contaminated soil and dust to off-site areas and runoff from rain can carry contamination outside the abatement area.

I. For projects lasting more than one Work day, daily cleaning using HEPA filtered vacuums and wet wiping techniques shall be performed on all surfaces in the Work area. All waste generated from the day's Work shall be stored in a secure lockable area away from public access. The Contractor shall perform a daily visual inspection to ensure no dust or debris has accumulated on the exterior of the Work area and the Work area barriers remain intact during the Work.

J. Upon completion of bulk removal, the Contractor shall perform one thorough cleaning of the removal substrate, Working platform and drop cloth. The Contractor will then notify the Environmental Consultant to perform a visual inspection to confirm completeness of abatement and completeness of cleanup. Upon completion of a satisfactory visual inspection the restricted area may be dismantled.

END OF SECTION 02 84 00

SECTION 030130 - MAINTENANCE OF CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Bonding agents.
2. Patching mortar.
3. Joint filler.
4. Epoxy crack-injection materials.

B. Related Sections:

1. Section “01 00 00 General Requirements for cutting, patching and repairs.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to concrete work, including, but not limited to, the following:

a. Verify required personnel, equipment, and facilities needed to make progress and avoid delays.
b. Materials, material application, sequencing, tolerances, and required clearances.
c. Shoring and bracing.
d. Quality-control program.
e. Coordination with building occupants.

1.3 ACTION SUBMITTALS

A. Product Data:

1. For each type of product.

a. Include construction details, material descriptions, chemical composition, physical properties, test data, and mixing, preparation, project application types consisting of horizontal, vertical or overhead locations and application instructions.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturers.

B. Material Certificates: For each type of material supplied for mixing or adding to products at Project site.

C. Field quality-control reports.

D. Quality-Control Program: Submit before work begins.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Each product manufacturer must employ factory-authorized service representatives who are available for consultation and Project-site inspection and on-site assistance.

B. Quality-Control Program: Prepare a written plan for concrete maintenance to systematically demonstrate the ability of personnel to properly perform maintenance work, including each phase or process, protection of surrounding materials during operations, and control of debris and runoff during the Work. Describe in detail materials, methods, equipment, and sequence of operations to be used for each phase of the Work.

C. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's written instructions for minimum and maximum temperature requirements and other conditions for storage.

B. Store cementitious materials off the ground, under cover, and in a dry location.

C. Store aggregates covered and in a dry location; maintain grading and other required characteristics and prevent contamination.

1.7 FIELD CONDITIONS

A. Environmental Limitations for Epoxies: Do not apply when air and substrate temperatures are outside limits permitted by manufacturer. During hot weather, cool epoxy components before mixing, store mixed products in shade, and cool unused mixed products to retard setting. Do not apply to wet substrates unless approved by manufacturer.

1. Use only Class A epoxies when substrate temperatures are below or are expected to go below 40 deg F (5 deg C) within eight hours.
2. Use only Class A or B epoxies when substrate temperatures are below or are expected to go below 60 deg F (16 deg C) within eight hours.
3. Use only Class C epoxies when substrate temperatures are above and are expected to stay above 60 deg F (16 deg C) for eight hours.

B. Cold-Weather Requirements for Cementitious Materials:

1. Do not apply unless concrete surface and air temperatures are above 40 deg F (5 deg C) and will remain so for at least 48 hours after completion of Work.
2. Comply with the following procedures:

a. When air temperature is below 40 deg F (5 deg C), heat patching-material ingredients and existing concrete to produce temperatures between 40 and 90 deg F (5 and 32 deg C).
b. When mean daily air temperature is between 25 and 40 deg F (minus 4 and plus 5 deg C), cover completed Work with weather-resistant insulating blankets for 48 hours after repair or provide enclosure and heat to maintain temperatures above 32 deg F (0 deg C) within the enclosure for 48 hours after repair.
c. When mean daily air temperature is below 25 deg F (minus 4 deg C), provide enclosure and heat to maintain temperatures above 32 deg F (0 deg C) within the enclosure for 48 hours after repair.

C. Hot-Weather Requirements for Cementitious Materials: Protect repair work when temperature and humidity conditions produce excessive evaporation of water from patching materials. Provide artificial shade and wind breaks and use cooled materials as required. Do not apply to substrates with temperatures of 90 deg F (32 deg C) and above.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:

a. Bonding-Agent and Packaged Patching-Mortar Installation: Three inspections.
b. Joint-Filler Installation: Two inspections.
c. Crack-Injection-Adhesive Preparation and Installation: Four inspections.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. For repair products, obtain each color, grade, finish, type, and variety of product from single source and from single manufacturer with resources to provide products of consistent quality in appearance and physical properties.

2.2 BONDING AGENTS

A. Epoxy-Modified, Cementitious Bonding and Anticorrosion Agent: Manufactured product that consists of water-insensitive epoxy adhesive, portland cement, and water-based solution of corrosion-inhibiting chemicals that forms a protective film on steel reinforcement.

B. Epoxy Bonding Agent: ASTM C881/C881M Type V bonding system, free of VOCs.

2.3 PATCHING MORTAR

A. Patching Mortar Requirements:

1. Only use patching mortars that are recommended by manufacturer for each applicable horizontal, vertical, or overhead use orientation.

B. Job-Mixed Patching Mortar: 1 part portland cement and 2-1/2 parts fine aggregate complying with ASTM C144, except 100 percent passing a No. 16 (1.18-mm) sieve.

C. Cementitious Patching Mortar: Packaged, dry mix for repair of concrete.

1. Compressive Strength: Not less than 4000 psi (27.6 MPa) at when tested in accordance with ASTM C109/C109M.

D. Rapid-Strengthening, Cementitious Patching Mortar: ASTM C928/C928M packaged, dry mix for repair of concrete.

1. Compressive Strength: Not less than 3000 psi (21.0 MPa) within hours when tested in accordance with ASTM C109/C109M.

E. Polymer-Modified, Cementitious Patching Mortar: Packaged, dry mix for repair of concrete and that contains a nonredispersible latex additive as either a dry powder or a separate liquid that is added during mixing.

1. Compressive Strength: Not less than 4000 psi (27.6 MPa) when tested in accordance with ASTM C109/C109M.

F. Polymer-Modified, Silica-Fume-Enhanced, Cementitious Patching Mortar: Packaged, dry mix for repair of concrete and that contains silica fume complying with ASTM C1240 and a latex additive as either a dry powder or a separate liquid that is added during mixing.

1. Compressive Strength: Not less than 4000 psi (27.6 MPa) at 28 days when tested in accordance with ASTM C109/C109M.

2.4 EPOXY CRACK-INJECTION MATERIALS

A. Epoxy Crack-Injection Adhesive: ASTM C881/C881M, bonding system Type V, free of VOCs.

1. Capping Adhesive: Product manufactured for use with crack-injection adhesive by same manufacturer.

2.5 POLYMER-OVERLAY MATERIALS

A. Polymer Overlay: Epoxy adhesive complying with ASTM C881/C881M, bonding system Type III, with surface-applied aggregate for skid resistance; free of VOCs.

1. Aggregate: ACI 503.3, oven-dried, washed silica sand.

2.6 POLYMER-SEALER MATERIALS

A. Epoxy Sealer: Low-viscosity epoxy, penetrating sealer and crack filler recommended by manufacturer for penetrating and sealing cracks in exterior concrete traffic surfaces;

B. Methacrylate Polymer Sealer: Low-viscosity, high-molecular-weight methacrylate**,** penetrating sealer and crack filler recommended by manufacturer for penetrating and sealing cracks in exterior concrete traffic surfaces;.

2.7 MISCELLANEOUS MATERIALS

A. Curing Materials: For ready-mixed concrete or packaged repair materials.

B. Formwork Materials: Form-facing materials must comply with ACI 301 (ACI 301M) requirements.

C. Water: Potable.

D. Cleaning Agent: Commercial muriatic acid solution.

2.8 MIXES

A. General: Mix products, in clean containers, in accordance with manufacturer's written instructions.

1. Do not add water, thinners, or additives unless recommended by manufacturer.
2. When practical, use manufacturer's premeasured packages to ensure that materials are mixed in proper proportions. When premeasured packages are not used, measure ingredients using graduated measuring containers; do not estimate quantities or use shovel or trowel as unit of measure.
3. Do not mix more materials than can be used within time limits recommended by manufacturer. Discard materials that have begun to set.

B. Dry-Pack Mortar: Mix required type(s) of patching-mortar dry ingredients with just enough liquid to form damp cohesive mixture that can be squeezed by hand into a ball but is not plastic.

C. Concrete Mixture Materials: Ready mixed.

1. ACI Publications: Comply with ACI 301 (ACI 301M) unless modified by requirements in the Contract Documents.
2. Portland Cement: ASTM C150/C150M, Type I, II, or III unless otherwise indicated.
3. Fly Ash: ASTM C618, Class C or F.
4. Slag Cement: ASTM C989/C989M, Grade 100 or 120.
5. Silica Fume: ASTM C1240 amorphous silica.
6. Aggregates: ASTM C330/C330M, nominal maximum aggregate size, gradation and types appropriate for the dimension of the repair area and project application.
7. Air-Entraining Admixture: ASTM C260/C260M.
8. Chemical Admixtures: Certified and as recommended by manufacturer for project applications to be compatible with other admixtures that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

D. Repair Underlayment:

1. Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3 mm) and that can be feathered at edges to match adjacent floor elevations.
2. Compressive Strength: Not less than 4100 psi (29 MPa) at 28 days when tested in accordance with ASTM C109/C109M.

E. Grout for Use with Preplaced Aggregate: Proportion in accordance with ASTM C938. Add grout fluidifier to mixing water followed by portland cement, pozzolan, and fine aggregate.

PART 3 - EXECUTION

3.1 CONCRETE MAINTENANCE

A. Have concrete-maintenance work performed only by qualified concrete-maintenance specialist.

B. Comply with manufacturers' written instructions for surface preparation and product application.

3.2 EXAMINATION

A. Notify Architect seven days in advance of dates when areas of deteriorated or delaminated concrete and deteriorated reinforcing bars will be located.

B. Locate areas of deteriorated or delaminated concrete using hammer or chain-drag sounding and mark boundaries. Mark areas for removal by simplifying and squaring off boundaries. At columns and walls, make boundaries level and plumb unless otherwise indicated.

C. Perform surveys as the Work progresses to detect hazards resulting from concrete-maintenance work.

3.3 PREPARATION

A. Ensure that supervisory personnel are on-site and on duty when concrete-maintenance work begins and during its progress.

B. Protect persons, motor vehicles, surrounding surfaces of building being repaired, building site, plants, and surrounding buildings from harm resulting from concrete-maintenance work.

1. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.
2. Use only proven protection methods appropriate to each area and surface being protected.
3. Provide temporary barricades, barriers, and directional signage to exclude public from areas where concrete-maintenance work is being performed.
4. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of concrete-maintenance work.
5. Contain dust and debris generated by concrete-maintenance work and prevent it from reaching the public or adjacent surfaces.
6. Use water-mist sprinkling and other wet methods to control dust only with adequate, approved procedures and equipment that ensure that such water will not create a hazard or adversely affect other building areas or materials.
7. Protect floors and other surfaces along haul routes from damage, wear, and staining.
8. Provide supplemental sound-control treatment to isolate removal and dismantling work from other areas of the building.
9. Protect adjacent surfaces and equipment by covering them with heavy polyethylene film and waterproof masking tape or a liquid-strippable masking agent. If practical, remove items, store, and reinstall after potentially damaging operations are complete.
10. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.
11. Dispose of debris and runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

C. Existing Drains: Prior to the start of concrete-maintenance work in an area, test drainage system to ensure that it is functioning properly. Notify Architect immediately of inadequate drainage or blockage. Do not begin concrete-maintenance work in an area until the drainage system is in working order.

1. Prevent solids, such as aggregate or mortar residue, from entering the drainage system. Clean out drains and drain lines that become sluggish or blocked by sand or other materials resulting from concrete-maintenance work.
2. Protect drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

D. Preparation for Concrete Removal: Examine construction to be repaired to determine best methods to safely and effectively perform concrete-maintenance work. Examine adjacent work to determine what protective measures will be necessary. Make explorations, probes, and inquiries as necessary to determine condition of construction to be removed in the course of repair.

1. Verify that affected utilities have been disconnected and capped.

2. Inventory and record the condition of items to be removed for reinstallation or salvage.
3. Provide and maintain shoring, bracing, and temporary structural supports as required to preserve stability and prevent unexpected or uncontrolled movement, settlement, or collapse of construction being demolished and construction and finishes to remain. Strengthen or add new supports when required during progress of removal work.

E. Surface Preparation for Overlays:

1. Remove deteriorated concrete surface material.
2. Roughen surface of concrete to produce a surface profile matching CSP 6+/- in accordance with ICRI 310.2.
3. Use high-pressure water jetting.
4. Sweep and vacuum roughened surface to remove debris followed by low-pressure water cleaning.

F. Nonacidic Surface Preparation for Sealers: Clean concrete to remove dirt, oils, films, and other materials detrimental to sealer application.

1. Use low-pressure water cleaning or detergent scrubbing.

3.4 APPLICATION OF BONDING AGENTS

A. Epoxy-Modified, Cementitious Bonding and Anticorrosion System: Apply to concrete by stiff brush or hopper spray in accordance with manufacturer's written instructions. Apply to reinforcing bars in two coats, allowing first coat to dry two to three hours before applying second coat. Allow to dry before placing patching mortar or concrete.

B. Latex Bonding Agent, Type I: Apply to concrete by brush roller or spray. Allow to dry before placing patching mortar or concrete.

3.5 INSTALLATION OF PATCHING MORTAR

A. Place patching mortar as specified in this article unless otherwise recommended in writing by manufacturer or where dry-pack mortar is indicated.

1. Wet substrate thoroughly and then remove standing water.

B. Vertical Patching: Place material in lifts of not more than or less than 1/4 inch (6 mm). Do not feather edge.

C. Overhead Patching: Place material in lifts of not more than or less than [1/8 inch (3 mm)] . Do not feather edge.

D. Consolidation: After each lift is placed, consolidate material and screed surface.

E. Multiple Lifts: Where multiple lifts are used, score surface of lifts to provide a rough surface for placing subsequent lifts. Allow each lift to reach final set before placing subsequent lifts.

F. Finishing: Allow surfaces of lifts that are to remain exposed to become firm and then finish to a surface matching adjacent concrete.

G. Curing: Wet-cure cementitious patching materials, including polymer-modified cementitious patching materials, for not less than seven days by water-fog spray or water-saturated absorptive cover.

3.6 INSTALLATION OF DRY-PACK MORTAR

A. Use dry-pack mortar for deep cavities and where indicated. Place as specified in this article unless otherwise recommended in writing by manufacturer.

1. Provide forms where necessary to confine patch to required shape.
2. Wet substrate and forms thoroughly and then remove standing water.

B. Pretreatment: Apply specified bonding agent.

C. Place dry-pack mortar into cavity by hand, and compact tightly into place. Do not place more material at a time than can be properly compacted. Continue placing and compacting until patch is approximately level with surrounding surface.

D. After cavity is filled and patch is compacted, trowel surface to match profile and finish of surrounding concrete. A thin coat of patching mortar may be troweled into the surface of patch to help obtain required finish.

E. Wet-cure patch for not less than seven days by water-fog spray or water-saturated absorptive cover.

3.7 CONCRETE PLACEMENT

A. Place concrete as specified in this article.

B. Epoxy-Modified Pretreatment: Apply epoxy bonding agent to reinforcement and concrete substrate.

C. Latex Pretreatment: Apply latex bonding agent Type I to concrete substrate.

D. Standard Placement: Place concrete by hand-troweled patching using a patching mortar method unless otherwise indicated.

1. Use vibrators to consolidate concrete as it is placed.
2. At unformed surfaces, screed concrete to produce a surface that when finished with patching mortar will match required profile and surrounding concrete.

E. Form-and-Pump Placement: Place concrete by form-and-pump method where indicated.

1. Design and construct forms to resist pumping pressure in addition to weight of wet concrete. Seal joints and seams in forms and where forms abut existing concrete.

2. Trowel concrete into place from bottom to top.

F. Wet-cure concrete for not less than seven days by leaving forms in place or keeping surfaces continuously wet by water-fog spray or water-saturated absorptive cover.

G. Fill placement cavities with dry-pack mortar and repair voids with patching mortar. Finish to match surrounding concrete.

3.8 APPLICATION OF EPOXY CRACK-INJECTION MATERIALS

A. Clean cracks with oil-free compressed air or low-pressure water to remove loose particles.

B. Clean areas to receive capping adhesive of oil, dirt, and other substances that would interfere with bond.

C. Place injection ports as recommended by epoxy manufacturer, spacing no farther apart than thickness of member being injected. Seal injection ports in place with capping adhesive.

D. Seal cracks at exposed surfaces with a ribbon of capping adhesive at least 1/4 inch (6 mm) thick by 1 inch (25 mm) wider than crack.

E. Inject cracks wider than 0.003 inch (0.075 mm) to a depth of 8 inches (200 mm).

F. Inject epoxy adhesive, beginning at widest part of crack and working toward narrower parts. Inject adhesive into ports to refusal, capping adjacent ports when they extrude epoxy. Cap injected ports and inject through adjacent ports until crack is filled.

G. After epoxy adhesive has set, remove injection ports and grind surfaces smooth.

3.9 APPLICATION OF POLYMER-SEALER MATERIALS

A. Apply polymer sealer by brush, roller, or airless spray at manufacturer's recommended application rate.

3.10 FIELD QUALITY CONTROL

A. Manufacturers Field Service: Engage manufacturers' factory-authorized service representatives for consultation and Project-site inspection and to provide on-site assistance when requested by Architect.

1. Have manufacturers' factory-authorized service representatives perform project-site inspections to observe progress and quality of the Work, distributed over the period of product installation, regardless of on-site assistance requested by Architect:

END OF SECTION 030130

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of contract, including general and supplementary conditions and Division 1 specification sections, apply to this section.

B. Concrete paving and walks are specified in Division 32.

1.2 DESCRIPTION OF WORK

A. This section specifies cast-in-place concrete, including formwork, reinforcing, mix design, placement procedures, and finishes.

1.3 QUALITY ASSURANCE

A. Reference Standards:

1. ACI 117 “Specification for Tolerances for Concrete Construction and Materials”
2. ACI 211.1 "Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete."
3. ACI 301 "Specifications for Structural Concrete for Buildings."
4. ACI 302 "Guide for Concrete Floor and Slab Construction."
5. ACI 304 "Guide for Measuring, Mixing, Transporting, and Placing Concrete"
6. ACI 305 "Hot-Weather Concreting."
7. ACI 306R "Cold-Weather Concreting."
8. ACI 311 "ACI Manual of Concrete Inspection" and "Guide for Concrete Plant Inspection and Testing of Ready-Mixed Concrete."
9. ACI 315 "Details and Detailing of Concrete Reinforcement."
10. ACI 318 "Building Code Requirements for Structural Concrete."
11. ACI 347 "Guide to Formwork for Concrete."
12. ACI SP-15 "Field Reference Manual." A copy of this publication shall be kept in the field office at all times during concrete construction.
13. CRSI "Manual of Standard Practice."
14. NYSDOT "Standard Specification for Construction and Materials."

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA’s “Certification of Ready Mixed Concrete Production Facilities.”

C. Source Limitations: To minimize irregularities in appearance or color, obtain cementitious materials of the same brand from the same manufacturer's plant. Obtain aggregates, admixtures, and water for each type of concrete construction exposed to view in completed project from same source for duration of that type of construction.

D. Provide protection of newly cast concrete from direct exposure to sun, wind, precipitation, and excessive cold or hot temperatures starting during placement and lasting until end of curing period.

1. Contractor shall be responsible for cost or repairing defects resulting from deficient protection methods.

1.4 SPECIAL INSPECTIONS

A. Refer to Specification Section 014533 and Schedule of Special Inspections.

1.5 MATERIAL EVALUATION/QUALITY CONTROL

A. Preconstruction Testing: Contractor shall employ Testing Agency acceptable to Engineer and Architect to perform material evaluation tests and evaluate concrete mixes prior to submitting.

1. Testing Agency shall be qualified according to ASTM C 1077 and ASTM E329.

B. Submit concrete testing service qualifications demonstrating experience with similar projects.

C. Require concrete supplier to provide delivery tickets for each truckload of concrete. Tickets shall be presented to and reviewed by Contractor and Special Inspector or Testing Agency prior to discharging concrete into structure.

1. Tickets shall contain project identification name, name of Contractor, name of concrete supplier, location of batch plant, date and time of concrete batching, truck number, delivery ticket number, concrete type and class, concrete mix number, design compressive strength at 28 days, concrete mix proportions and materials, and amount of total mix design water that can be added at site prior to discharging into structure if total mix design water was not used when batched. See Part 3 of this section for maximum water amount that can be added at site.

D. The Registered Design Professionals (RDPs) for Structural Engineering and Architecture and the Special Inspector will visit construction site at appropriate intervals to determine if work is in general conformance with Contract Documents and specifications. Notify RDPs 48 hours before anticipated time of completion of reinforcement for a given section of work so they may determine if site observations are required. If site observations are required, do not place concrete until RDPs have had opportunity to observe reinforcement.

E. Concrete strength will be evaluated by compression testing in accordance with ASTM C39 as part of the Special Inspections. Test results shall be provided to the Contractor, Special Inspector, and Registered Design Professional (RDP) responsible for Structural Engineering.

Evaluation and acceptance will be in accordance with the provisions of ACI 318, Section 26.12. Should evidence of low-strength concrete exist, or if test results indicate non-conformance with these specifications, additional investigation as outlined in ACI 318 Section 26.12.4 may be directed by the project Registered Design Professionals (RDP). All such investigation, including the cost of the Architect's and Engineer's time, shall be at the Contractor's expense.

F. If, after additional investigation, evidence of low-strength concrete still exists, load tests in accordance with Chapter 27 of ACI 318 may be ordered by the project Registered Design Professionals (RDP). In the event the concrete is determined to be inadequate by the project Registered Design Professionals (RDP), the Contractor shall remove it from the Project and replace it with concrete conforming to these specifications, subject to project Special Inspections and testing requirements herein. All such remedial work shall be at the Contractor's expense.

G. The Contractor shall be fully responsible for ensuring that all concrete and concrete placement are in accordance with the Project Specifications. Failure of project Registered Design Professionals (RDP) or Testing Laboratory to detect defective work, workmanship, or materials shall in no way prevent rejection and the Contractor taking accepted corrective action when such defects are discovered.

1.6 SUBMITTALS

A. Shop Drawings:

1. Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Show bar sizes, lengths, material grade, schedules, spacing, diagrams of bent bars, arrangements of reinforcement, splices and laps, mechanical connections, and supports for reinforcement. Include special reinforcement required for openings through concrete.

    a. Show elevations of reinforcement for all members at minimum 1/4 inch = 1 foot scale.
    b. Reference Contract Drawing number and addendum number in each shop drawing.
    c. Do not place reinforcing information from more than one design discipline (structural, civil, landscape) in each drawing.

B. Mix Designs: Submit proposed mix designs for concrete 15 days minimum before start of concreting. Proportion concrete in accordance with the requirements of ACI 301, section 4.2.2 and 4.2.3. For each concrete mixture, include the following:

1. Mixture identification.
2. Minimum 28-day compressive strength and documentation of average compressive strength in strict accordance with ACI 301, section 4.2.3.4.
3. Durability exposure class.
4. Maximum w/cm.
5. Slump limit.
6. Air content.
7. Nominal maximum aggregate size.
8. Shrinkage test results in accordance with ASTM C157.

9. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.
10. Include manufacturer's certification that permeability-reducing admixture is compatible with mix design.
11. Include certification that dosage rate for permeability-reducing admixture matches dosage rate used in performance compliance test.
12. Intended placement method.
13. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Product Data, Material Certificates (signed by manufacturer), and Material Test Reports (from a qualified testing agency) as applicable: For each of the following.

1. Portland cement.
2. Fly ash.
3. Slag cement.
4. Blended hydraulic cement.
5. Silica fume.
6. Performance-based hydraulic cement
7. Aggregates.
8. Admixtures: Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.
9. Floor and slab treatments.
10. Curing materials.
11. Joint fillers.
12. Repair materials and bonding agents.

D. Submit to Special Inspector and Engineer material certificates signed by manufacturers certifying each material complies with specifications. Submit proposed admixtures including chloride ion content prior to submitting mix design.

E. Submit data and installation instructions for proprietary materials.

F. Maintain copies of approved submittals on site and make available to Special Inspector and Authority having Jurisdiction for use in inspection of construction.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials so as to preserve their quality and fitness for work.

1. Store reinforcement and formwork in manner to prevent bending, damage (including damage to coatings) and accumulation of dirt.

1.8 WORKMANSHIP

A. Contractor shall be responsible for correction of concrete work not conforming to specified requirements, including strength, tolerances, and finishes. Correct deficient concrete as directed by Architect.

B. Remove work found to be defective. Replace with new acceptable work.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

A. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed/plywood faced, or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown in drawings. Plywood materials shall be one of the following:

1. Overlaid plywood complying with U.S. Product Standards PS 1 "A-C or B-B High Density Overlaid (HDO) Concrete Form," Class 1, exterior grade or better.
2. Plywood complying with U.S. Product Standard PS 1 "B-B (Concrete Form) Plywood," Class 1, exterior grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.

B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch minimum.

D. Form Release Agent: Provide commercial formulation form-coating compounds with maximum VOC of 450 g/l that will not bond with, stain, or adversely affect concrete surfaces or impair subsequent treatments of concrete surfaces requiring bond or adhesion or impede wetting of surfaces to be cured with water or curing compound.

1. Formulate form release agent with rust inhibiter for steel form-facing materials.

E. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off, metal form ties, designed to prevent form deflection and spalling concrete upon removal. Provide units that will leave no metal closer than 1 inch to exposed surface.

1. Provide ties that will leave holes no larger than 1-inch diameter in concrete surface when removed.
2. Furnish ties with integral water-barrier plates or washers to walls indicated to receive dampproofing or waterproofing.
3. Unexposed concrete: “Type A-3 Snap Tie Standard” by Dayton Superior or accepted equivalent.
4. Provide galvanized or stainless steel ties for concrete elements that are reinforced with epoxy-coated reinforcing.

5. Internal wood spreaders are prohibited.

2.2 REINFORCING MATERIALS

A. Deformed bars: ASTM A 615, Grade 60.

B. Deformed Epoxy-Coated Reinforcing Bars: ASTM A 775. Coating to be applied after fabrication and bending.

C. Steel Wire: ASTM A 82, plain, cold-drawn steel.

D. Epoxy-coated Wire: ASTM A 884/A 884M, Class A, Type 1 coated, plain steel wire, with less than 2 percent damaged coating in each 12-inch wire length.

1. Provide coated wire ties for use with epoxy-coated bars. Acceptable coatings include epoxy, nylon, or vinyl. Do not use plain wire ties.

E. Deformed Steel Wire: ASTM A416/A 496M.

F. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.

G. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775.

H. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars in place. Use wire bar-type or all plastic-type supports complying with CRSI specifications. Use chairs with sand plates or horizontal runners where base material will not support chair legs.

1. Supports for epoxy-coated reinforcing shall be either wire bar-type coated with epoxy, plastic, or vinyl compatible with concrete for a minimum distance of 2 inches from the point of contact with reinforcing or all plastic-type.
2. Finish (epoxy-coated) for supports formed from reinforcing bars shall match the finish of the supported reinforcing.

I. Minimum 16-gauge annealed tie wire, ASTM A 82.

1. Provide coated tie wire for use with epoxy-coated bars. Acceptable coatings include epoxy, nylon, or vinyl. Do not use plain tie wire.

2.3 CONCRETE MATERIALS

A. Portland Cement:

1. ASTM C 150, Type I or II.
2. ASTM C595, Type IL (Blended Hydraulic Cement)

B. Aggregates: ASTM C33/C33M, coarse aggregate or better, or NYSDOT-approved, Section 703 (normal weight), one source and as specified.

1. Fine Aggregate: Clean, sharp, natural sand free from loam, clay, lumps, or other deleterious substances. Less than 10 percent passing No. 100 sieve and less than 3 precent passing No. 200 sieve.
2. Coarse Aggregate: Clean, uncoated, processed aggregate free from clay, mud, loam, or foreign matter.

a. Maximum Coarse Aggregate Size - 1 inch.

3. Coarse Aggregate for Slabs on Grade: Uniformly graded, clean, processed, crushed stone with low absorption and free of flat/elongated particles. NYSDOT-approved, size 3A gravel can be used to meet large diameter requirement. Gradation similar to blended NYSDOT Type CA 2 and size 1A or ASTM C 33 Type 57 and Type 8, blended and modified as follows:

Sieve Size	Percent Passing
1 inch	100
3/4 inch	75 to 94
1/2 inch	25 to 50
3/8 inch	10 to 25
No. 4	0 to 10

4. Lightweight Coarse Aggregate for Sloped Toppiong: ASTM C 330, Size 3/4-inch to No. 4. Dry unit weight of concrete shall be a maximum 120 pcf from a batch weight of 120 to 124 pcf, presoaked to achieve a damp condition according to ACI 211.2; limit shrinkage to 0.03 percent at 28 days.

C. Water: ASTM C 94, clean, fresh, drinkable.

D. Fly Ash: ASTM C 618, Type F, with a loss on ignition of less than 6 percent.

E. Ground-Granulated, Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

F. Silica Fume: ASTM C1240

2.4 ADMIXTURES

A. Air Entraining: ASTM C 260.

B. Set-Control Admixtures are not permitted for concrete to be used for slabs on grade.

C. Water-Reducing Admixture: “Eucon MR”, "Eucon WR-75”, or “Eucon WR-91” by Euclid Chemical Co.; “MasterPozzolith 200” by Master Builders; or "Plastocrete 161" by Sika Chemical Corp. Admixture shall conform to ASTM C 494, Type A, and not contain more chloride ions than in municipal drinking water.

D. Water-Reducing and Retarding Admixture: "Eucon Retarder-75" by Euclid Chemical Co; “MasterSet R100” by Master Builders; or "Plastiment" by Sika Chemical Corp. Admixture shall conform to ASTM C 494, Type D, and not contain more chloride ions than in municipal drinking water.

E. Mid to High Range Water Reducer/Finish Enhancer for slabs on grade and metal deck only: “MasterPolyheed 997” by Master Builders; “Sikament 686” by Sika Chemical Corp; or accepted equivalent. Admixture shall conform to ASTM C 494 Type A and F and not contain more chloride ions than in municipal drinking water.

F. Noncorrosive, Nonchloride Accelerator: ASTM C 494, Type C or E, and not contain more chloride ions than in municipal drinking water.

G. High-Range, Water-Reducing Admixture (Superplasticizer): "Eucon 37" by Euclid Chemical Co. or "Sikament SPMN" by Sika Chemical Corp. Admixture shall conform to ASTM C 494, Type F or G, and not contain more chloride ions than in municipal drinking water.

H. Prohibited Admixtures: Calcium chloride, thiocyanates, and admixtures containing more than 0.05 percent water-soluble chloride ions by weight of cement or more than 0.3 percent thiocyanates by weight of cement shall not be permitted.

I. Certification: Written conformance to the above-mentioned requirements and the chloride ion content of the admixture will be required from the admixture manufacturer prior to mix design review by the Registered Design Professional responsible for Structural Engineering.

2.5 RELATED MATERIALS

A. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 ounces a square yard when dry and complying with AASHTO M 182, Class 2.

B. Curing-Sheet Materials: Waterproof paper, polyethylene film, or polyethylene-coated burlap.

C. Clear Curing and Sealing Compound (VOC compliant): ASTM C 309, Type 1, Class B with minimum 25 percent solids content. Provide test data from an Independent Testing Laboratory indicating a maximum moisture loss of 0.030 grams per square centimeter in 72 hours when applied at a coverage rate of 300 square feet per gallon. Sodium silicate compounds are not permitted. Use "Super Diamond Clear VOX" by Euclid Chemical Co. or accepted equivalent.

D. Horizontal Joint Sealants: “MasterSeal SL2” by Master Builders; “Sikaflex-2c SL” by Sika Corp.; “Eucolastic 1 SL” by Euclid Chemical Co.; or accepted equivalent.

E. Joint Filler: ASTM D 1751, ½-inch-thick, premolded, expansion and isolation joint filler strips.

F. Backer Rod: Polyethylene closed-cell foam. “MasterSeal 920 or 921” by Master Builders or accepted equivalent.

G. Chamfer Strips: Provide wood, metal, PVC, or rubber chamfer strips fabricated to provide 3/4-inch chamfer on exposed edges.

H. Anchor Rods and Leveling Plates: Furnished in Section 051200 and installed under this section.

I. Non-shrink Grout: Corp of Engineers CRD-C 621. “Sure-Grip High Performance Grout” by Dayton Superior; “NS Grout” by Euclid Chemical Co.; “SikaGrout 212” by Sika Corp.; “Masterflow 928” by Master Builders, Inc.; or accepted equivalent.

J. Bonding Agent: ASTM C 1059, Type II “Acrylic Bonding Agent J40” by Dayton Superior; “SBR Latex” by Euclid Chemical Co.; “Everbond” by L&M Construction Chemicals, Inc.; “SikaLatex” by Sika Corp.; or accepted equivalent.

K. Horizontal Patching Material for Shallow Repairs and at Deck Drains: Trowel grade, polymer-modified cementitious repair mortar with integral corrosion inhibitor: “Sika Top 122 Plus” by Sika Corporation; “Conpro Set” by Conproco Corporation, “MasterEmaco N 420 CI” by Master Builders Solutions; or accepted equivalent.

L. Chemical Adhesive for Drilled and Doweled Reinforcement:

1. Anchors to solid concrete, grouted CMU, solid brick, or stone:

a. Anchors for use when base material temperature is 0°F or greater: “HIT-Ice” by Hilti; “Epcon A7” by ITW Ramset/Red Head; “AC 100 + Gold” by Powers Fasteners; “AT-XP” by Simpson/Strong-Tie; or accepted equivalent.
b. Anchors for use when base material temperature is 40°F or greater; “HIT HY 200” by Hilti; “Epcon C6+” by ITW Ramset/Red Head; “PE 1000+” by Powers Fasteners; “ET-HP” by Simpson/Strong-Tie; or accepted equivalent.

M. Premolded Joint Filler for Slabs on Grade: Provide resilient and nonextruding, premolded, bituminous fiberboard units complying with ASTM D 1751; 1/2-inch-thick, full slab depth.

N. Construction Joint Form: Square edge form only. Keyed joint not permitted.

O. Polyurethane Joint Sealant for Exterior Slabs on Grade: “Sikaflex-2c SL” by Sika; “MasterSeal SL2” by Master Builders; “Eucolastic 2 SL” by Euclid Chemical Co.; “Urexpan NR-200” by Pecora Corporation; or accepted equivalent.

P. Penetrating Exterior Anti-Spalling Sealer: “Euco-Guard 100” by Euclid Chemical Co. (mixed to 17.5 percent concentration); “Sikagard H400” by Sika; “L&M Aquapel Plus” by Laticrete; or accepted equivalent.

Q. Evaporation Retarder: Monomolecular, film-forming compound applied to exposed concrete slab surfaces for temporary protection from rapid moisture loss. “Aquafilm J74RTU” by Dayton Superior; “Eucobar” by Euclid Chemical Co.; “MasterKure ER 50” by Master Builders, Inc.; or accepted equivalent.

R. Crack Repair Material: For cracks smaller than 1/8 inch, use “Sikagard-20 Pronto TF” methacrylate by Sika; “Rapid Refloor” polyurea by Metzger McGuire; or accepted equivalent. For cracks greater than 1/8 inch, use specified joint filler material.

2.6 PROPORTIONING AND MIX DESIGN

A. Prepare design mixtures for type and strength of concrete in accordance with ACI 301, section 4.2.2 and these specifications. Use independent testing facility acceptable to Architect for preparing and reporting proposed mix designs.

B. Where concrete production facility can establish uniformity of its production for concrete of similar strength and materials based on recent test data, the average strength used as a basis for determining mix design proportions shall exceed specified design strength by requirements of ACI 301, Section 4.2.3.3(a).

C. When a concrete production facility does not have field-test records for calculation of standard deviation, the required average strength shall be determined in accordance with ACI 301, Section 4.2.3.3(b).

D. Documentation of average compressive strength shall comply with ACI 301, Section 4.2.3.4(a), 4.2.3.4(b), or 4.2.3.4(c). Submit sample standard deviation calculation and/or results of trial mixtures used as basis for determination of f'cr. See Specification Section 1.6.B.

E. Unless otherwise noted, concrete shall be normal weight concrete having a unit weight of between 143 pcf to 148 pcf.

F. Quantity of coarse aggregate in pounds must be in the range of 1.25 to 1.5 times quantity of fine aggregate in pounds. For slabs on grade and deck, provide minimum of 1,800 pounds of coarse aggregate for each cubic yard of concrete.

G. Admixtures: Structural concrete for columns, beams, and slabs shall contain the specified water-reducing admixture and/or high range water-reducing admixture (superplasticizer.) At the Contractor's option, both water-reducing admixtures may be included in the concrete mix. Concrete required to be air-entrained shall contain the accepted air entraining admixture. Pumped concrete, architectural concrete, and concrete with a water-cement ration less than 0.5 shall contain the specified high range water-reducing admixture (superplasticizer.)

H. Slump:

1. Piers, misc. concrete: 3 inches to 5 inches.
2. Slabs on Grade: 5-inch maximum for normal and mid-range, water-reducer mixes. Concrete containing high-range, water-reducing admixture (superplasticizer) shall have maximum slump of 6 inches unless otherwise accepted by Engineer.
3. Concrete containing high-range, water-reducing admixture (superplasticizer) shall have a maximum slump of 9 inches unless otherwise accepted by Engineer.
4. Type G superplasticizer may be added at plant if adequate quality control measures are implemented to verify slump and admixture quantities at plant before addition of superplasticizer. Concrete shall maintain required slump during transportation and placement. Quality control testing at plant shall be performed by an independent testing laboratory employed by Contractor and acceptable to Architect.
5. Ready-Mix Concrete: ASTM C 94.

6. Provide batch ticket for each batch discharged and used in work indicating project identification name and number, date, mix type, mix time, quantity, and amount of water introduced.

I. Pozzolans:

1. Pozzolans may be substituted for cement in normal-weight concrete, including fly ash, ground-granulated blast-furnace slag, and/or silica fume.

   a. Substitution rate of Pozzolans for Portland Cement in concrete classified as Exposure Category F3 shall be limited to: fly ash, at a maximum rate of 25 percent by weight, ground-granulated blast-furnace slag at a maximum rate of 50 percent by weight, or silica fume at a maximum rate of 10 percent by weight.
   b. Proposed concrete mix designs containing a combination of fly ash, ground-granulated blast-furnace slag, or silica fume shall comply with the substitution limitations indicated in Table 26.4.2.2(b) of ACI 318.
   c. Pozzolans shall be used at a rate of 20 percent by weight of total cementitious materials for exterior slabs on grade.

2. Submittals shall include actual mix design, including percentage of pozzolans and test results showing mix meets specified 7-day compressive strength where indicated, 28-day compressive strength, and air content.
3. Protect and heat concrete containing pozzolans during cold-weather conditions. Maintain protection and heat until 70 percent of specified design strength is achieved.

J. Pumped concrete: Submit mix designs specifically prepared and used previously for pumping. Mix designs not previously used for anticipated pump line lengths shall be tested by Contractor to verify suitability for Project before use at site. Pump line shall have 5-inch-minimum inside diameter and be used with 5-inch pumps.

K. Shrinkage: All concrete for walls and slabs shall utilize concrete with shrinkage of less than 0.05 percent (inches per inch) at 28 days tested in accordance with ASTM C157 unless other methods to reduce deleterious effects of shrinkage are utilized.

L. For lightweight concrete in slabs on grade and metal deck, provide minimum 675 pounds of lightweight coarse aggregate (saturated, surface dry) for each cubic yard of concrete.

2.7 REINFORCING FABRICATION

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice." Fabricate bars to required lengths, shapes, and bends. Do not rebend or straighten reinforcement in manner that could weaken material.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

A. Examine conditions under which work shall be performed. Do not proceed with work until unsatisfactory conditions are corrected.

B. Whenever possible, air temperature should be rising after concrete placement. Attempt to schedule slab placements according to favorable weather reports.

3.2 FORMWORK INSTALLATION

A. General: Design, erect, shore, brace, and maintain formwork to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances complying with ACI 347 and ACI 117.

B. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, chamfers, blocking, screeds, bulkheads, anchorages, inserts, sleeves, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent concrete mortar leakage.

C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, recesses, etc., for easy removal.

D. Chamfer exposed corners and edges as indicated using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

E. Fit corners and joints with gaskets or tape to prevent leakage.

F. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.

G. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before concrete is placed. Retighten forms and bracing before placing concrete as required to prevent mortar leaks and maintain proper alignment.

H. Clean and repair surfaces of forms to be reused in work. Split, frayed, delaminated, or otherwise damaged form-facing materials are not acceptable. Apply new form-release agent. When forms are reused for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joints to avoid offsets. Do not use patch forms for exposed concrete surfaces unless approved by Architect.

I. Clean and coat forms before erection. Do not coat forms in place.

J. Place concrete plugs in exposed holes left by form-tie cones.

3.3 STEEL REINFORCEMENT PLACEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

B. Clean reinforcement of loose rust, mill scale, earth, ice, and other materials that reduce or destroy bond with concrete.

C. Accurately position, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcement by metal chairs, runners, bolsters, spacers, hangers, or concrete brick as required.

1. Wire-tie intersections as required to prevent displacement of reinforcement.
2. Do not wet set reinforcing bars. Wet setting is not permitted.

D. Place reinforcement to obtain concrete coverages for protection of bars. Required concrete cover is noted in drawings.

E. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

F. Use of nails in forms and use of clay brick to support reinforcement is prohibited.

G. Coordinate placement of reinforcement with openings, including sleeves and other embedded items. Where one or more bars are interrupted, provide additional reinforcement at openings. Additional reinforcement is noted in drawings.

H. Place concrete in manner to ensure alignment of elements remains unchanged.

I. Epoxy-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.

J. Comply with manufacturer-recommended procedures for installing and anchoring of doweled reinforcement using chemical adhesives, including drilling and cleaning of holes and mixing and applying of adhesives.

K. Place slab reinforcing one-third of the slab thickness below top surface of slabs on grade and 1 inch below top surface of slabs on metal deck. Support reinforcement by metal chairs, runners, bolsters, or concrete brick (slabs on grade only) as required. Stagger brick locations.

3.4 INSTALLATION OF EMBEDDED ITEMS

A. General: Set and build into work anchorage devices and other embedded items including anchor rods, required for other work attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached thereto.

B. Do not wet set embedded items. Accurately position, support, and secure embedded items against displacing by formwork, construction, or concrete placement operations.

1. Provide No. 3 rebar ties at top and bottom of anchor rods to maintain position or other accepted method.

C. Anchor rods and embedded structural supports incorrectly located or damaged after installation shall be field modified, including repair or replacement, by Contractor.

1. Notify Engineer of defective work. Submit proposed field modifications to Engineer for review and acceptance prior to making corrections.
2. Proposed field modifications shall include design details and calculations, signed and sealed by a licensed Professional Engineer hired by Contractor.
3. Field modifications shall be tested in accordance with Section 051200. Perform pull-out tests and other appropriate tests on each repair.
4. Cost of field modifications shall be borne entirely by Contractor at no additional cost to Owner. Contractor shall reimburse Owner for cost of additional testing required.

3.5 PREPARATION OF FORM SURFACES

A. General: Coat contact surfaces of forms with an accepted form-coating compound before placing reinforcement.

B. Do not allow excess form-coating material to accumulate in forms or to come in contact with in-place concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.

C. Coat steel forms with a nonstaining, rust-preventive material. Rust-stained steel formwork is not acceptable.

3.6 ISOLATION JOINTS FOR SLABS ON GRADE

A. Construct isolation joints in slabs at points of contact with vertical surface and elsewhere as indicated.

3.7 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and in compliance with construction documents and approved shop drawings, and required inspections have been performed.

1. Notify other trades to permit installation of their work. Cooperate with other trades in setting work as required.

B. General: Comply with ACI 304, "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete" and as specified.

C. Deposit concrete within 1-1/2 hour after water is added to dry batching, or use retarding admixture if accepted by the registered design professional responsible for structural engineering.

1. A maximum of 2 1/2 gallons for each cubic yard of total mix design water can be added in field. Water must be added prior to discharging and testing concrete. At no time shall total water exceed amount listed in accepted mix design.

D. Deposit concrete as nearly as practicable to its final location to avoid segregation caused by rehandling or flowing.

E. Keep excavations free of water. Do not deposit concrete in water, mud, snow, or on frozen ground.

F. Maximum drop of concrete shall not exceed 5 feet. Use hopper and trunk for greater drops.

G. Maintain reinforcing in proper position during concrete placement.

H. Pumping concrete is permitted only if mix designs specifically prepared and used previously for pumping are submitted. Pump line shall have 5-inch-minimum inside diameter and be used with 5-inch pumps.

I. After placing concrete, screed to levels and slopes indicated. Do not use tamping tools to force aggregate away from surface. When the water sheen has disappeared, finish surface as indicated.

3.8 PLACING LIGHT WEIGHT CONCRETE TOPPING

A. Maximum of 2 1/2 gallons for each cubic yard of total mix design water can be added in field. Water must be added prior to discharging and testing concrete. At no time shall total water exceed amount listed in accepted mix design.

B. TOPPING:

1. Deposit and consolidate concrete in continuous operation within limits of construction joints until placing of panel or section is completed.
2. Consolidate concrete during placing operations.
3. Use bull floats or darbies to smooth surface, leaving it free of humps or hollows. Do not sprinkle water on plastic surface. Do not disturb slab surfaces before beginning finishing operations.

4. For floor areas with drains, Contractor shall be responsible for finishing concrete slabs to proper elevations to ensure surface moisture will drain freely to floor drains and no puddle areas exist. Reference elevations shown in drawings.
5. Cost of corrections to provide for positive drainage shall be responsibility of Contractor.

3.9 CONSOLIDATION

A. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI 309.

B. Do not use vibrators to transport concrete inside formwork.

C. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Vibrators shall penetrate placed layer of concrete at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set.

D. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

E. Do not allow vibrator to come in contact with form.

3.10 SURFACE FINISHES

A. Rough-Form Finish: Provide as-cast, rough-form finish to formed concrete surfaces that shall be concealed in finished work or by other construction. Standard rough-form finish is concrete surface having texture imparted by form-facing material used, with tie holes and other defective areas repaired and patched, and fins or other projections exceeding 1/4 inch in height rubbed down or chipped off.

B. Smooth-Form Finish: Provide smooth-form finish for formed concrete surfaces that shall be exposed to view or covered with material applied directly to concrete such as waterproofing, dampproofing, veneer plaster, painting, or other similar systems. Produce smooth-form finish by selecting form material to impart a smooth, hard, uniform texture and arranging them orderly and symmetrically with minimum of seams. Repair and patch defective areas with fins and other projections completely removed and smoothed.

C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike off smooth and finish with texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

D. Slab Float Finish: Apply power-float finish to slab surfaces that will subsequently be trowel-finished or covered with waterproofing membrane. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Using float blade or float shoes only, begin floating when surface water has disappeared, when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-

driven floats or by hand-floating if area is small or inaccessible to power units. Check surface plane to overall tolerance of F_F 18 and minimum local tolerance of F_F 13. Cut down high spots, and fill low spots. Uniformly slope surface to drains. Immediately after leveling, refloat surface to uniform, smooth, granular texture.

E. Do not use dry materials, such as sand and cement, on surfaces during finishing. Do not sprinkle water on plastic surface. Do not disturb slab surfaces before beginning final finishing operations.

F. Delay finishing as long as possible. Allow bleed water to evaporate before finishing.

3.11 CONCRETE PROTECTING AND CURING

A. Protect freshly placed concrete from premature drying, excessive hot or cold temperature, and damage in accordance with provisions of ACI 306R for cold-weather protection and ACI 305, for hot-weather protection.

B. Curing Methods: Perform concrete curing in accordance with ACI 308 by wet-curing or moisture-retaining cover curing (sheet curing) or combinations thereof as specified. Provide wet cure for exterior slabs on grade.

C. Provide wet-curing by following methods:

1. Keep concrete surface continuously wet by covering with water.
2. Use continuous water-fog spray.
3. Cover concrete surface with specified absorptive cover, thoroughly saturate cover with water, and keep continuously wet for at least (7) seven days. Place absorptive cover to provide coverage of concrete surfaces and edges with 4-inch lap over adjacent absorptive covers.

D. Provide moisture-retaining-cover curing as follows:

1. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches and sealed by waterproof tape or adhesive. Cure for not less than (7) seven days. Immediately repair holes or tears during curing period using cover material and waterproof tape.

E. Curing Vertical-Formed Surfaces:

1. Keep forms in place for minimum of 7 days, 14 days in cold weather or until concrete has achieved 70 percent of its design strength.
2. If forms are removed before minimum time period, alternate methods of curing, wet-curing, moisture-retaining-cover curing, or liquid-membrane curing, are required.

    a. Contractor shall submit procedures to Architect for review.
    b. Forms shall remain in place for a minimum of 24 hours when alternating methods of curing are used. For placement during cold weather, the minimum time to form removal shall be extended based on expected weather conditions and Contractor’s submitted procedures.

F. Cure concrete placed under cold-weather conditions completely covering exposed surface of concrete with moisture-retaining cover completely sealed around edges. Cure concrete 14 days minimum with concrete temperature at or above 40 degrees F or 7 days minimum with concrete temperature at or above 70 degrees F.

G. During hot weather after concrete has hardened, loosen form ties, keeping forms in place, and apply water to inside face of form to keep concrete continuously moist.

H. Do not allow foot or other traffic over slabs during 7-day curing period.

I. Provide protection for concrete slabs from direct exposure to sun, wind, precipitation, and excessive cold or hot temperatures lasting from concrete placement until the building is enclosed and conditioned.

1. Protect the slab surface and slab openings from exposure to water; this includes water from construction activities and precipitation.
2. Contractor shall be responsible for cost of repairing slab defects and moisture issues resulting from deficient protection methods.

J. Exterior Slabs on grade:

1. Apply penetrating exterior anti-spalling sealer to exterior concrete slabs, walks, platforms, steps, ramps, and curbs according to manufacturer's directions.

3.12 COLD-WEATHER CONCRETING

A. Place concrete in accordance with ACI 306R.

B. For cold-weather concreting (defined as when air temperature has fallen to or is expected to fall below 40 degrees F (4 degrees C) during the protection period), maintain concrete temperature in accordance with Table 5.1, and maintain concrete protection in accordance with Table 7.1 in "Cold-Weather Concreting" reported by ACI Committee 306.

C. When air temperature has fallen to or is expected to fall below 40 degrees F (4 degrees C), uniformly heat water and aggregates before mixing to obtain concrete mixture temperature recommended in Table 5.1 of ACI 306R.

1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
2. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators.

3.13 HOT-WEATHER CONCRETING

A. Place concrete in accordance with ACI 305.

B. Cool ingredients before mixing to maintain concrete temperature below 85 degrees F at time of placement.

C. Mixing water may be chilled or chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing water.

D. Cover reinforcing steel with water-soaked burlap if temperature of reinforcing steel exceeds ambient air temperature.

E. Wet forms thoroughly before placing concrete.

F. Fog-spray forms and reinforcing steel just before placing concrete.

G. Use water-reducing, retarding admixture when required by high temperature, low humidity, or other adverse placing conditions when acceptable to Architect.

3.14 JOINT SEALANT

A. Install joint sealant in exposed construction and isolation joints in accordance with manufacturer's recommendations.

B. Clean joints thoroughly before applying sealant.

C. Apply sealant after slabs have cured 90 days minimum.

3.15 CONCRETE SURFACE REPAIRS

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after form removal when acceptable to Architect.

1. Cut out honeycombs, rock pockets, voids over 1/2 inch in any dimension, and holes left by tie rods and bolts, down to solid concrete but not to a depth of less than 1 inch. Make edges of cuts perpendicular to concrete surface. Thoroughly clean, dampen with water, and brush-coat area to be patched with bonding agent. Place patching mortar before bonding compound has dried.
2. For exposed-to-view surfaces, blend white portland cement and standard portland cement so patching mortar will match surrounding color when dry. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.

B. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. These include surface defects such as color, texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form-tie holes, and fill with dry-pack mortar or precast-cement cone plugs secured in place with bonding agent.

1. Where possible, repair concealed formed surfaces containing defects affecting concrete durability. If defects cannot be repaired, remove and replace concrete.

C. Repair of Unformed Surfaces: Test unformed surfaces for smoothness, and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas. Test unformed surfaces sloped to drain for trueness of slope and smoothness by using template having required slope.

1. Repair finished unformed surfaces containing defects affecting concrete durability. These include surface defects such as crazing, cracks, spalling, popouts, honeycombs, rock pockets, and other objectionable conditions.

D. Repair methods not specified above may be used subject to acceptance of Architect.

3.16 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures for passage of work by other trades unless otherwise shown or directed after work of other trades is in place. Mix, place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling required to complete work.

3.17 TOLERANCES

A. Concrete Section/Placement/Formwork

1. Dimensions of Piers.

a. 12 inches or less: + 3/8 inch or - ¼ inch
b. 12 inches to 36 inches: + ½ inch or - 3/8 inch
c. thicker than 36 inches: + 1 inch or - ¾ inch

2. Horizontal deviation from location (center) specified in plan from straight lines parallel to specified linear building lines:

a. +/- 1/4 inch for adjacent members less than 20 feet apart t; 1/2 inch for adjacent members 20 feet or more apart.
b. other elements: +/- 1 inch

B. Reinforcing

1. Concrete cover measured perpendicular to concrete surface

a. member depth (or thickness) 12 inches or less: - 3/8 inch
b. member depth (or thickness) over 12 inches: - ½ inch

In all cases the reduction in cover shall not exceed 1/3 the specified concrete cover.

2. Vertical or horizontal variation from specified in plan

a. member depth 4 inch or less: +/- ¼ inch
b. member depth (or thickness) over 4 inch but not over 12 inch: +/- 3/8 inch
c. member depth (or thickness) over 12 inches: +/- ½ inch

3. Spacing, measured long a line parallel to the specified spacing:

   a. ties: lesser of +/- 3 inches or +/-1 inch per foot of least column width

   In all cases the total number of bars shall not be less than that specified.

4. Longitudinal location of bends in bars and ends of bars:

   a. at discontinuous ends of elements: +/- 1 inch
   b. at other locations: +/- 2 inch

5. Length of bar lap for #3 to #11: -1 inch

C. Anchor Rods and Sleeves:

1. Variation from specified location in plan: plus or minus 1/4 inch.
2. Variation from specified elevation: plus or minus 1/2 inch.

END OF SECTION 033000 (10/2025)

SECTION 04 01 10 - MASONRY CLEANING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Paint removers.
2. Cleaning materials.
3. Liquid strippable masking agent.

1.2 DEFINITIONS

A. Very Low-Pressure Spray: Under 100 psi

B. Low-Pressure Spray: 100 to 400 psi); 4 to 6 gpm

C. Medium-Pressure Spray: 400 to 800 psi ; 4 to 6 gpm .

D. High-Pressure Spray: 800 to 1200 psi; 4 to 6 gpm

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site

1. Review methods and procedures related to cleaning masonry, including, but not limited to, the following:

a. Manufacturer's representative of cleaning materials to be present during testing for consultation.
b. Masonry types.
c. Soiling types.
d. Verify masonry-cleaning equipment and facilities needed to make progress and avoid delays.
e. Materials, material application, and sequencing.
f. Cleaning types and cleaning methods.
g. Quality-control program.
h. Review cleaning program.
i. Coordination with building occupants.

1.4 SEQUENCING AND SCHEDULING

A. Work Sequence: Perform masonry-cleaning Work in the following sequence:

1. Remove plant growth and any other biological growth.
2. Inspect for open mortar joints. Where repairs are required, delay further cleaning Work until after repairs are completed, cured, and dried to prevent the intrusion of water and other cleaning materials into the wall.
3. Remove paint or graffiti.
4. Clean masonry surfaces.
5. Where water repellents are to be used on or near masonry, delay application of these chemicals until after cleaning.

B. As scaffolding is removed, patch anchor holes used to attach scaffolding. Patch holes in masonry units and joints in accordance with masonry repair Sections.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include material descriptions and application instructions.
2. Include test data substantiating that products comply with requirements.

B. Material certificates signed by manufacturer and Contractor certifying that each material complies with requirements.

C. Each type of chemical cleaning material.

D. Qualification data for firms and specialists to demonstrate their capabilities and experience. Include list of five completed projects with project names and references.

E. Cleaning Program:

1. Describe cleaning protocol, materials, methods, and equipment to be used.
2. Indicate protection of surrounding materials on people, vehicles, buildings, and site items.
3. Describe control method of runoff during operations.
4. Create written report of final cleaning methods and process used.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For paint-remover manufacturer and chemical-cleaner manufacturer.

B. Preconstruction Test Reports: For cleaning materials and methods.

1.7 QUALITY ASSURANCE

A. Source of Materials: Obtain materials for masonry cleaning from a single source for each type of substrate required to ensure quality of cleaning.

B. Paint-Remover Manufacturer Qualifications: A firm regularly engaged in producing masonry cleaners that have been used for similar applications with successful results, employs factory-authorized service representatives who are available for consultation and Project-site inspection, preconstruction product testing, and on-site assistance.

C. Masonry-Cleaning Specialist Firms: A firm that provides masonry cleaning, including masonry cleaners that have been used for similar applications with successful results, and is manufacturer authorized for consultation and Project-site inspection, preconstruction product testing, and on-site assistance.

D. Chemical-Cleaner Manufacturer Qualifications: A firm regularly engaged in producing masonry cleaners that have been used for similar applications with successful results, who employs factory-authorized service representatives who are available for consultation and Project-site inspection, preconstruction product testing, and on-site assistance.

E. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising performance and preventing damage.

F. Cleaning Program: Prepare a written cleaning program that describes cleaning process in detail, including materials, methods, and equipment to be used; protection of surrounding materials; and control of runoff during operations. Include provisions for supervising worker performance and preventing damage.

1. If materials and methods other than those indicated are proposed for any phase of cleaning Work, add a written description of such materials and methods, including evidence of successful use on comparable projects and demonstrations to show their effectiveness for this Project.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver masonry materials to Project in undamaged condition.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit masonry-cleaning Work to be performed in accordance with product manufacturers' written instructions and specified requirements.

B. Clean masonry surfaces only when air temperature is 40 deg F and above and is predicted to remain so for at least seven days after completion of cleaning.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has thawed and dried out, but not less than seven days after completion of cleaning.
2. Hot-Weather Requirements: Protect unit masonry Work when temperature and humidity conditions produce excessive evaporation of water from masonry. Provide artificial shade and wind breaks and use cooled materials as required.

C. Refer to chemical cleaner manufacturer's recommendations for application techniques when hot-weather conditions exist.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS

A. Water: Potable.

B. Hot Water: Water heated to a temperature of 140 to 160 deg F (60 to 71 deg C).

C. Detergent Solution, Job Mixed: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium pyrophosphate (TSPP), 1/2 cup (125 mL) of laundry detergent, and 20 quarts (20 L) of hot water for every 5 gal. (20 L) of solution required.

D. Mold, Mildew, and Algae Remover, Job Mixed: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium pyrophosphate (TSPP), 5 quarts (5 L) of 5 percent sodium hypochlorite (bleach), and 15 quarts (15 L) of hot water for every 5 gal. (20 L) of solution required.

E. Nonacidic Liquid Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.

1. Masonry Substrate: Clay masonry, Concrete masonry units and Stone.

F. Mild-Acid Cleaner: Manufacturer's standard mild-acid cleaner containing no muriatic (hydrochloric), hydrofluoric, or sulfuric acid; or ammonium bifluoride or chlorine bleaches.

1. Masonry Substrate: Clay masonry, Concrete masonry units and Stone.

G. Acidic Cleaner: Manufacturer's standard acidic masonry cleaner composed of hydrofluoric acid or ammonium bifluoride blended with other acids, detergents, wetting agents, and inhibitors. Protect metals, glass, and ceramic glazes.

1. Masonry Substrate: Clay masonry, Concrete masonry units and Stone.

2.2 ACCESSORY MATERIALS

A. Provide materials with previous effectiveness in performing the Work involved.

1. Include materials with minimal possibility of damaging exposed surfaces.
2. Materials with consistency of each application.
3. Materials that provide uniformity of the resulting overall appearance.

B. Do not use products or tools that could do the following:

1. Remove, alter, or harm the present condition or future preservation of existing surfaces, including surrounding surfaces.
2. Leave residue on surfaces.

C. Equipment: Provide equipment for controlled spray application of water and chemical cleaners.

1. For chemical cleaner spray applications, provide a low-pressure tank or chemical pump suitable for the chemical cleaner indicated, equipped with spray tip for cleaning method applications.

D. Natural bristles brushes only.

E. Trowels.

F. Provide additional accessories applicable to project conditions, including tapes, sheets, etc., to suit Project.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrate conditions with specialist present, for requirements for cleaning type, methods, products, and other conditions affecting performance.

3.2 PREPARATION

A. General: Comply with each manufacturer's written instructions for protecting people, motor vehicles, surrounding buildings, masonry areas not to be cleaned, non-masonry surfaces, landscaping, equipment, and other surfaces that could be injured or harmed by such Work.

1. Provide temporary protective covers over pedestrian walkway areas and at points of entrance and exit for people, motor vehicles, and equipment that must remain during duration of cleaning procedures.
2. Cover adjacent surfaces with materials that are proven to resist paint removers and chemical cleaners used unless products being used will not damage adjacent surfaces. Use protective materials that are waterproof and UV resistant.
3. Temporarily protect all open joints to prevent intrusion of washing waters into the wall structure or building interior.
4. Remove all extraneous items no longer in use on face of surface unless indicated to remain. Where not indicated, obtain approval with Architect.
5. Apply masking agents in accordance with manufacturer's written instructions. Do not apply liquid strippable masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.
6. Neutralize alkaline and acid wastes before disposal where applicable.

B. Provide disposal of runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

3.3 APPLICATION OF PRELIMINARY CLEANING MATERIALS

A. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to planned cleaning methods.

1. Carefully remove heavy accumulations of rigid materials from masonry surface with sharp chisel. Do not scratch or chip masonry surface.
2. Removing Biological Growth: Completely remove visible biological, moss, and shrub growth from masonry surfaces. Carefully remove biological growths, creepers, and vegetation by cutting at roots and allowing remaining growth to dry as long as possible before removal. Remove loose soil and biological debris from open joints to whatever depth they occur.
3. Mold, Mildew, and Algae Removal:

    a. Wet surface with cold water applied by low-pressure spray.
    b. Apply mold, mildew, and algae remover by brush or low-pressure spray.
    c. Scrub surface with medium-soft brushes until mold, mildew, and algae are thoroughly dislodged and can be removed by rinsing. Use small brushes for mortar joints and crevices. Dip brush in mold, mildew, and algae remover often to ensure that adequate fresh cleaner is used and that surface remains wet.
    d. Rinse with cold water applied by low-pressure spray to remove mold, mildew, and algae remover and soil.

3.4 GENERAL APPLICATION OF CLEANING METHODS

A. Chemical Cleaning: Do not apply during winds of enough force to spread them to unprotected surfaces.

B. Cleaning Appearance Standard: Cleaned surfaces are to have a uniform appearance as viewed from 50 ft. away by Architect.

C. Proceed with cleaning in an orderly manner; work from top to bottom of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water do not wash over dry, cleaned surfaces.

D. Use only those cleaning methods indicated for each masonry material and location.

1. Brushes: Do not use wire brushes or brushes that are not resistant to chemical cleaner being used.
2. Spray Equipment: Use spray equipment that provides controlled application at volume and pressure indicated, measured at nozzle. Adjust pressure and volume to ensure that cleaning methods do not damage surfaces, including joints.

    a. Equip units with pressure gages.

b. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with nozzle having a cone-shaped spray.
c. For water-spray application, use fan-shaped spray that disperses water at an angle of 25 to 50 degrees.

E. Poultices: Where needed, provide a paste or slurry made with absorbent material or powder-inert clay, such as kaolin or sepiolite, diatomaceous earth (fuller's earth), or cellulose products such as pulp cellulose or shredded paper that is mixed with a cleaning solution (a liquid reagent such as water, organic solvent, among others).

F. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces. Keep wall wet below area being cleaned to prevent streaking from runoff.

G. Perform additional general cleaning, paint and stain removal, and spot cleaning of small areas that are noticeably different when viewed in accordance with "Cleaning Appearance Standard" Paragraph, so that cleaned surfaces blend smoothly into surrounding areas.

H. Remove minor stains (cuprous, ferrous, etc.) if any.

3.5 WATER-CLEANING TYPE

A. Water Application Methods:

1. Water-Soak Application: Soak masonry surfaces by applying water continuously and uniformly to limited area for time indicated. Apply water at low pressures and low volumes in multiple fine sprays using perforated hoses or multiple spray nozzles. Erect a protective enclosure constructed of polyethylene sheeting to cover area being sprayed.
2. Water-Spray Applications: Unless otherwise indicated, hold spray nozzle at least 6 inches from masonry surface and apply water in horizontal back-and-forth sweeping motion, overlapping previous strokes to produce uniform coverage.

B. Cold-Water Soak:

1. Apply cold water by intermittent spraying to keep surface moist.
2. Use perforated hoses or other means that apply a fine water mist to entire surface being cleaned.
3. Apply water in cycles of five minutes on and 20 minutes off.
4. Continue spraying until surface encrustation has softened enough to permit its removal by water wash, as indicated by cleaning tests.
5. Remove soil and softened surface encrustation from surface with cold water applied by low-pressure spray.

C. Cold-Water Wash: Use cold water applied by low-pressure spray.

D. Hot-Water Wash: Use hot water applied by low-pressure spray.

E. Steam Cleaning: Apply steam at very low pressures not exceeding 30 psi Remove dirt softened by steam with wood scrapers, stiff-nylon or -fiber brushes, or cold-water wash, as indicated by cleaning tests.

3.6 CHEMICAL-CLEANING TYPE

A. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces in accordance with chemical-cleaner manufacturer's written instructions; use brush application. Do not spray apply at pressures exceeding 50 psi. Do not allow chemicals to remain on surface for periods longer than those indicated or recommended in writing by manufacturer.

1. Consult with cleaning product manufacturer to verify what products require pre-wetting of substrate before cleaner application.

B. Dilute chemical cleaners with water when required to produce solutions not exceeding concentration recommended in writing by chemical-cleaner manufacturer.

C. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.

1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.

D. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

E. Detergent Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Scrub surface with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet.
3. Rinse with cold water applied by low-pressure spray to remove detergent solution and soil.

F. Nonacidic Liquid Chemical Cleaning: .

1. Wet surface with hot water applied by low-pressure spray.
2. Apply cleaner to surface in two applications by brush or low-pressure spray. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer.
3. Rinse with hot water applied by low-pressure spray to remove chemicals and soil.
4. Repeat cleaning procedure above where required to produce cleaning effect established. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

G. Mild-Acid Chemical Cleaning:

1. Wet surface with cold water applied by low-pressure spray.

2. Apply cleaner to surface in two applications by brush or low-pressure spray.
3. Retain one option in first subparagraph below; revise to suit Project. Third option is an example only.
4. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer established.
5. Rinse with cold water applied by low-pressure spray to remove chemicals and soil.
6. Repeat cleaning procedure above where required to produce cleaning effect established.
7. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

H. Acidic Chemical Cleaning: .

1. Wet surface with cold water applied by low-pressure spray.
2. Apply cleaner to surface in two applications by brush or low-pressure spray.
3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer established for 2 to 3 minutes.
4. Rinse with cold water applied by low-pressure spray to remove chemicals and soil. Rinse until all foaming, if any, stops and suds disappear.
5. Repeat cleaning procedure above where required to produce cleaning effect established.
6. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

I. One-Part Limestone Chemical Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Apply cleaner to surface by brush or low-pressure spray.
3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer .
4. Immediately repeat application of one-part limestone cleaner as indicated above over the same area.

3.7 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage paint-remover manufacturer's and chemical-cleaner manufacturer's factory-authorized service representatives for consultation and Project-site inspection, to perform preconstruction product testing, and provide on-site assistance when requested by Architect. Have paint-remover manufacturer's and chemical-cleaner manufacturer's factory-authorized service representatives visit Project site not less than once to observing progress and quality of the work.

3.8 FINAL CLEANING

A. Clean adjacent non-masonry surfaces of spillage and debris. Use detergent and soft brushes or cloths.

B. Remove masking materials, leaving no residues that could trap dirt.

C. Clean landscaping areas of debris.

3.9 PROTECTION

A. Provide final protection and maintain conditions in a manner acceptable to Architect, which ensures cleaning Work without being soiled at time of substantial completion.

END OF SECTION 04 01 10

SECTION 04 01 20 - BRICK MASONRY REPAIR

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Masonry materials.
2. Mortar materials.
3. Manufactured repair materials.

B. Related Requirements:

1. Section 07 92 00 "Joint Sealants" for joint sealants, joint fillers, and sealant-joint preparation for repaired masonry.

1.2 DEFINITIONS

A. Existing to Remain: Existing items of construction that are not to be removed.

B. Low-Pressure Spray: 100 to 400 psi ; 4 to 6 gpm.

C. Remove: Detach items from existing construction and legally dispose of off-site unless indicated to be removed and salvaged or removed and reinstalled.

D. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner or storage as indicated.

E. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage; prepare for reuse; and reinstall where indicated.

F. Rebuilding (Setting) Mortar: Mortar used to set and anchor masonry in a structure, distinct from pointing mortar installed after masonry is set in place.

G. Saturation Coefficient: Ratio of the weight of water absorbed during immersion in cold water to weight absorbed during immersion in boiling water; used as an indication of resistance of bricks to freezing and thawing.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site

1. Review methods and procedures related to brick masonry repair including, but not limited to, the following:

a. Verify brick masonry repair specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
b. Materials, material application, sequencing, tolerances, and required clearances.
c. Cleaning types and cleaning methods.
d. Quality-control program.
e. Review cleaning program.
f. Coordination with building occupants.
g. Protection and barriers for the public.

1.4 SEQUENCING AND SCHEDULING

A. Order sand and gray portland cement for colored mortar immediately after approval of Samples. Take delivery of and store at Project site enough quantity to complete Project.

B. Work Sequence: Perform brick masonry repair work in the following sequence, which includes work specified in this and other Sections:

1. Remove plant growth.
2. Inspect masonry for open mortar joints and point them before cleaning to prevent the intrusion of water and other cleaning materials into the wall.
3. Remove paint.
4. Remove Window units
5. Clean masonry.
6. Rake out mortar from joints surrounding masonry to be replaced and from joints adjacent to masonry repairs along joints.
7. Repair masonry, including replacing existing masonry with new masonry materials.
8. Rake out mortar from joints to be repointed.
9. Install window units.
10. Point mortar and sealant joints.
11. After repairs and repointing have been completed and cured, perform a final cleaning to remove residues from this work.

C. As scaffolding is removed, patch anchor holes used to attach scaffolding. Patch holes in bricks in accordance with "Brick Masonry Patching" Article. Patch holes in mortar joints according to Section 04 01 20.64 "Brick Masonry Repointing."

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include recommendations for product application and use.
3. Include test data substantiating that products comply with requirements.

B. Shop Drawings:

1. Include plans, elevations, sections, and locations of replacement bricks on the structure, showing relation of existing and new or relocated units.
2. Show provisions for expansion joints or other sealant joints.
3. Show provisions for flashing, lighting fixtures, conduits, and weep holes as required.
4. Show locations of scaffolding and points of scaffolding in contact with masonry. Include details of each point of contact or anchorage.

C. Samples for Initial Selection: For the following:

1. Colored Mortar: Submit sets of mortar that will be left exposed in the form of sample mortar strips, 6 inches long by 1/2 inch wide, set in aluminum or plastic channels.

a. Have each set contain a close color range of at least three Samples of different mixes of colored sands and cements that produce a mortar matching existing, cleaned mortar when cured and dry.
b. Submit with precise measurements on ingredients, proportions, gradations, and source of colored sands from which each Sample was made.

2. Sand Types Used for Mortar: Minimum 8 oz. of each in plastic screw-top jars.
3. Patching Compound: Submit sets of patching compound Samples in the form of plugs (patches in drilled holes) in sample units of masonry representative of the range of masonry colors on the building.

a. Have each set contain a close color range of at least three Samples of different mixes of patching compound that matches the variations in existing masonry when cured and dry.

4. Include similar Samples of accessories involving color selection.

D. Samples for Verification: For the following:

1. Accessories: Each type of accessory and miscellaneous support.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For brick masonry repair specialist and testing service.

B. Quality-control program.

1.7 QUALITY ASSURANCE

A. Brick Masonry Repair Specialist Qualifications: Engage an experienced brick masonry repair firm to perform Work of this Section. Firm is to have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience in only installing masonry is insufficient experience for masonry repair work.

1. Field Supervision: Brick masonry repair specialist firm is to maintain experienced full-time supervisors on Project site during times that brick masonry repair work is in progress.
2. Brick Masonry Repair Workers: When bricks are being patched, at least one worker per crew should be trained and certified by manufacturer of patching compound to apply its products performing the work of brick repairs.

B. Brick-Cleaning Specialist Firms: A firm that provides masonry cleaning, including masonry cleaners that have been used for similar applications with successful results, and is manufacturer authorized for consultation and Project-site inspection, preconstruction product testing, and on-site assistance.

C. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising performance and preventing damage.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver bricks to Project site strapped together in suitable packs or pallets or in heavy-duty cartons and protected against impact and chipping.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.

D. Store sand where grading and other required characteristics can be maintained and contamination avoided.

E. Handle bricks to prevent overstressing, chipping, defacement, and other damage.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit brick masonry repair work to be performed in accordance with product manufacturers' written instructions and specified requirements.

B. Cold-Weather Requirements: Comply with the following procedures for masonry repair unless otherwise indicated:

1. When air temperature is below 40 deg F heat mortar ingredients, masonry repair materials, and existing masonry walls to produce temperatures between 40 and 120 deg F
2. When mean daily air temperature is below 40 deg F, provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for seven days after repair.

C. Hot-Weather Requirements: Protect masonry repairs when temperature and humidity conditions produce excessive evaporation of water from mortar and repair materials. Provide artificial shade and wind breaks, and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F and above unless otherwise indicated.

D. For manufactured repair materials, perform work within the environmental limits set by each manufacturer.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces

2.2 MASONRY MATERIALS

A. Masonry Materials: Face brick, required to complete brick masonry repair work.

1. Brick Matching Existing: Units with colors, color variation within units, surface texture, size, and shape that match existing brickwork and with physical properties as listed below:

a. For existing brickwork that exhibits a range of colors or color variation within units, provide brick that proportionally matches that range and variation rather than brick that matches an individual color within that range.

2. Brick Matching Architect's Sample: Units with colors, color variation within units, surface texture, and physical properties that match Architect's sample. Match existing units in size and shape.

a. For Architect's sample that exhibits a range of colors or color variation within units, provide brick that proportionally matches that range rather than brick that matches an individual color within that range.

3. Tolerances as Fabricated: In accordance with tolerance requirements in ASTM C216, Type FBS.
4. Grade SW where in contact with earth.
5. Grade SW, Grade MW, or Grade NW for concealed backup.

2.3 MORTAR MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or Type II, except Type III may be used for cold-weather construction; white or gray, or both where required for color matching of mortar.

1. Provide cement containing not more than 0.60 percent total alkali when tested in accordance with ASTM C114.

B. Hydrated Lime: ASTM C207, Type S.

C. Masonry Cement: ASTM C91/C91M.

D. Mortar Cement: ASTM C1329/C1329M.

E. Mortar Sand: ASTM C144.

1. Exposed Mortar: Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.

F. Water: Potable.

2.4 ACCESSORY MATERIALS

A. Masking Tape: Nonstaining, nonabsorbent material; compatible with mortar, joint primers, sealants, and surfaces adjacent to joints; and that easily comes off entirely, including adhesive.

B. Other Products: Select materials and methods of use based on the following, subject to approval:

1. Previous effectiveness in performing the work involved.
2. Minimal possibility of damaging exposed surfaces.
3. Consistency of each application.
4. Uniformity of the resulting overall appearance.
5. Do not use products or tools that could leave residue on surfaces.

2.5 MORTAR MIXES

A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.

B. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's approval.

1. Mortar Pigments: Where mortar pigments are indicated, do not add pigment exceeding 10 percent by weight of the cementitious or binder materials, except for carbon black which is limited to 2 percent, unless otherwise demonstrated by a satisfactory history of performance.

C. Do not use admixtures in mortar unless otherwise indicated.

D. Mixes: Mix mortar materials in the following proportions:

1. Rebuilding (Setting) Mortar by Property: ASTM C270, Property Specification, Type N unless otherwise indicated; with cementitious material limited to Portland cement and lime.
2. Pigmented, Colored Mortar: Add mortar pigments to produce exposed, setting (rebuilding) mortar of colors required.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrate conditions with specialist present, for compliance with requirements for brick units, repair methods, products, and other conditions affecting performance of the Work.

3.2 PREPARATION

A. General: Comply with each manufacturer's written instructions for protecting people, motor vehicles, surrounding buildings, masonry areas not to be cleaned, non-masonry surfaces, landscaping, equipment, and other surfaces that could be injured or harmed by such Work.

1. Provide temporary protective covers over pedestrian walkway areas and at points of entrance and exit for people, motor vehicles, and equipment that must remain during duration of repairing procedures.
2. Cover adjacent surfaces with materials that are proven to resist paint removers and chemical cleaners used unless products being used will not damage adjacent surfaces. Use protective materials that are waterproof and UV resistant.
3. Temporarily protect all open joints to prevent intrusion of washing waters into the wall structure or building interior.
4. Remove all extraneous items no longer in use on face of surface unless indicated to remain. Where not indicated, obtain approval with Architect.

3.3 PROTECTION

A. Prevent mortar from staining face of surrounding masonry and other surfaces.

1. Cover sills, ledges, and other projecting items to protect them from mortar droppings.
2. Keep wall area wet below rebuilding and repair work to discourage mortar from adhering.
3. Immediately remove mortar splatters in contact with exposed masonry and other surfaces.

3.4 MASONRY REPAIR, GENERAL

A. Appearance Standard: Repaired surfaces are to have a uniform appearance as viewed from 50 ft. away by Architect.

3.5 ABANDONED ANCHOR REMOVAL

A. Remove abandoned anchors, brackets, wood nailers, and other extraneous items no longer in use unless indicated to remain.

1. Remove items carefully to avoid spalling or cracking masonry.
2. Notify Architect before proceeding if an item cannot be removed without damaging surrounding masonry. Do the following where directed:

    a. Cut or grind off item approximately 3/4 inch beneath surface and core drill a recess of same depth in surrounding masonry as close around item as practical.
    b. Immediately paint exposed end of item with two coats of antirust coating, following coating manufacturer's written instructions and without exceeding manufacturer's recommended dry film thickness per coat. Keep paint off sides of recess.

3. Patch hole where each item was removed unless directed to remove and replace bricks.

3.6 BRICK REMOVAL AND REPLACEMENT

A. At locations indicated, remove bricks that are damaged, spalled, or deteriorated or are to be reused. Carefully remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.

1. When removing single bricks, remove material from center of brick and work toward outside edges.

B. Support and protect remaining masonry that surrounds removal area.

C. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition. Coordinate with new flashing, reinforcement, and lintels, which are specified in other Sections.

D. Notify Architect of unforeseen detrimental conditions, including voids, cracks, bulges, and loose units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.

E. Remove in an undamaged condition as many whole bricks as possible.

1. Remove mortar, loose particles, and soil from brick by cleaning with hand chisels, brushes, and water.
2. Remove sealants by cutting close to brick with utility knife and cleaning with solvents.
3. Store brick for reuse. Store off ground, on skids, and protected from weather.
4. Deliver cleaned brick not required for reuse to Owner unless otherwise indicated.

F. Clean masonry surrounding removal areas by removing mortar, dust, and loose particles in preparation for brick replacement.

G. Replace removed damaged brick with other removed brick in good condition, where possible, or with new brick matching existing brick. Do not use broken units unless they can be cut to usable size.

H. Install replacement brick into bonding and coursing pattern of existing brick. If cutting is required, use a motor-driven saw designed to cut masonry with clean, sharp, unchipped edges.

1. Maintain joint width for replacement units to match existing joints.
2. Use setting buttons or shims to set units accurately spaced with uniform joints.

I. Lay replacement brick with rebuilding (setting) mortar and with completely filled bed, head, and collar joints. Butter ends with enough mortar to fill head joints and shove into place. Wet both replacement and surrounding bricks that have ASTM C67/C67M initial rates of absorption (suction) of more than 30 g/30 sq. in. per min. Use wetting methods that ensure that units are nearly saturated but surface is dry when laid.

1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brickwork.

J. Curing: Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours, including weekends and holidays.

1. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

3.7 PAINTING STEEL UNCOVERED DURING THE WORK

A. Notify Architect if steel is exposed during masonry removal. Where Architect determines that steel is structural, or for other reasons cannot be totally removed, prepare and paint it as follows:

1. Surface Preparation: Remove paint, rust, and other contaminants in accordance with SSPC-SP 2, "Hand Tool Cleaning" as applicable to comply with paint manufacturer's recommended preparation.
2. Antirust Coating: Immediately paint exposed steel with two coats of antirust coating, following coating manufacturer's written instructions and without exceeding manufacturer's recommended rate of application (dry film thickness per coat).

B. If on inspection and rust removal, the thickness of a steel member is found to be reduced from rust by more than 1/16 inch notify Architect before proceeding.

3.8 FINAL CLEANING

A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water applied by low-pressure spray.

1. Do not use metal scrapers or brushes.
2. Do not use acidic or alkaline cleaners.

B. Clean adjacent non-masonry surfaces. Use detergent and soft brushes or cloths.

C. Remove masking materials, leaving no residues that could trap dirt.

3.9 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections. Allow inspectors use of lift devices and scaffolding, as needed, to perform inspections.

B. Architect's Project Representatives: Architect will assign Project representatives to help carry out Architect's responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Architect's Project representatives use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.

C. Notify inspectors and Architect's Project representatives in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until inspectors and Architect's Project representatives have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location.

3.10 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property.

B. Masonry Waste: Remove masonry waste and legally dispose of off Owner's property.

END OF SECTION 04 01 20.63

SECTION 04 01 21 - BRICK MASONRY REPOINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Mortar materials.
2. Mortar mixes.

B. Related Requirements:

1. Section 04 01 10 "Masonry Cleaning" for cleaning and paint removal from both clay masonry and stone.
2. Section 04 01 20 to 6 gpm.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site

1. Review methods and procedures related to repointing brick masonry including, but not limited to, the following:

a. Verify brick masonry repointing specialist personnel, equipment, and facilities needed to make progress and avoid delays.
b. Materials, material application, sequencing, tolerances, and required clearances.
c. Quality-control program.
d. Coordination with building occupants.

1.3 SEQUENCING AND SCHEDULING

A. Order sand and gray Portland cement for pointing mortar immediately after approval of Samples. Take delivery of and store at Project site enough quantity to complete Project.

B. Work Sequence: Perform brick masonry repointing Work in the following sequence, which includes Work specified in this and other Sections:

1. Remove plant growth.
2. Inspect masonry for open mortar joints and permanently or temporarily point them before cleaning to prevent the intrusion of water and other cleaning materials into the wall.
3. Remove existing window and door units as directed on drawings.
4. Remove paint.
5. Clean masonry.
6. Rake out mortar from joints surrounding masonry to be replaced and from joints adjacent to masonry repairs along joints.

7. Install window and door units as directed on drawings.
8. Repair masonry, including replacing existing masonry with new masonry materials.
9. Rake out mortar from joints to be repointed.
10. Point mortar and sealant joints.
11. After repairs and repointing have been completed and cured, perform a final cleaning to remove residues from this work.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include recommendations for product application and use.
3. Include test data substantiating that products comply with requirements.

B. Shop Drawings:

1. Include plans, elevations, sections, and locations of repointing work on the structure.
2. Show provisions for expansion joints or other sealant joints.
3. Show locations of scaffolding and points of scaffolding in contact with masonry. Include details of each point of contact or anchorage.

C. Samples for Initial Selection: For the following:

1. Pointing Mortar: Submit sets of mortar for pointing in the form of sample mortar strips, 6 inches long by1/2 inchwide, set in aluminum or plastic channels.

    a. Have each set contain a close color range of at least three Samples of different mixes of colored sands and cements that produce a mortar matching existing, cleaned mortar when cured and dry.
    b. Submit with precise measurements on ingredients, proportions, gradations, and source of colored sands from which each Sample was made.

2. Sand Type Used for Pointing Mortar: Minimum 8 oz. of each in plastic screw-top jars.
3. Sealant materials.
4. Include similar Samples of accessories involving color selection.

D. Samples for Verification: For the following:

1. Each type, color, and texture of pointing mortar in the form of sample mortar strips, 6 inches long by 1/2 inch wide, set in aluminum or plastic channels.

    a. Include with each Sample a list of ingredients with proportions of each. Identify sources, both supplier and quarry, of each type of sand and brand names of cementitious materials and pigments if any.

2. Sealant materials.
3. Accessories: Each type of accessory and miscellaneous support.

1.5 INFORMATIONAL SUBMITTALS

A. Preconstruction Test Reports: For existing bricks and mortar.

B. Quality-control program.

C. Qualification Statements: For brick masonry repointing specialist and testing service.

1.6 QUALITY ASSURANCE

A. Brick Masonry Repointing Specialist Qualifications: Engage an experienced brick masonry repointing firm to perform work of this Section. Firm is to have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience in only installing masonry is insufficient experience for masonry repointing work.

1. Field Supervision: Brick masonry repointing specialist firms are to maintain experienced full-time supervisors on Project site during times that brick masonry repointing work is in progress.

B. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising performance and preventing damage.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver packaged materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.

D. Store sand where grading and other required characteristics can be maintained and contamination avoided.

1.8 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit repointing work to be performed in accordance with product manufacturers' written instructions and specified requirements.

B. Cold-Weather Requirements: Comply with the following procedures for mortar-joint pointing unless otherwise indicated:

1. When air temperature is below 40 deg F, heat mortar ingredients and existing masonry walls to produce temperatures between 40 and 120 deg F.
2. When mean daily air temperature is below 40 deg F, provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for seven days after pointing.

C. Hot-Weather Requirements: Protect mortar-joint pointing when temperature and humidity conditions produce excessive evaporation of water from mortar materials. Provide artificial shade and wind breaks, and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F and above unless otherwise indicated.

PART 2 - PRODUCTS

2.1 MORTAR MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or Type II, except Type III may be used for cold-weather construction; white or gray, or both where required for color matching of mortar.

B. Hydrated Lime: ASTM C207, Type S.

C. Mortar Cement: ASTM C1329/C1329M.

1. Quickrete Mortar Mix

2. Sakrete Mortar Mix

3. CTS Cement Mortar Mix

D. Mortar Sand: ASTM C144.

1. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.
2. Color: Natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color.

E. Water: Potable.

2.2 MORTAR MIXES

A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.

B. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's written approval.

1. Mortar Pigments: Where mortar pigments are indicated, do not add pigment exceeding 10 percent by weight of the cementitious or binder materials, except for carbon black

which is limited to 2 percent, unless otherwise demonstrated by a satisfactory history of performance.

C. Do not use admixtures in mortar unless otherwise indicated.

D. Mixes: Mix mortar materials in the following proportions:

1. Pointing Mortar by Property: ASTM C270, Property Specification, Type N unless otherwise indicated; with cementitious material limited to mortar cement. Add mortar pigments to produce mortar colors required.

2.3 ACCESSORY MATERIALS

A. Sealant Materials:

1. Sealant manufacturer's standard elastomeric sealant(s) of base polymer and characteristics in accordance with applicable requirements in Section 079200 "Joint Sealants."

B. Masking Tape: Nonstaining, nonabsorbent material; compatible with mortar, joint primers, sealants, and surfaces adjacent to joints; and that easily comes off entirely, including adhesive.

PART 3 - EXECUTION

3.1 PROTECTION

A. Prevent mortar from staining face of surrounding masonry and other surfaces.

1. Cover sills, ledges, and other projecting items to protect them from mortar droppings.
2. Keep wall area wet below pointing work to discourage mortar from adhering.
3. Immediately remove mortar splatters in contact with exposed masonry and other surfaces.

3.2 MASONRY REPOINTING, GENERAL

A. Appearance Standard: Repointed surfaces are to have a uniform appearance as viewed from 20 ft. away by Architect.

3.3 REPOINTING

A. Rake out and repoint joints to the following extent:

1. All joints in areas indicated.
2. Joints at locations of the following defects:

a. Holes and missing mortar.
b. Cracks that can be penetrated 1/4 inch or more by a knife blade 0.027 inch thick.

c. Cracks 1/8 inch or more in width and of any depth.
d. Deterioration to point that mortar can be easily removed by hand, without tools.
e. Joints filled with substances other than mortar.

B. Do not rake out and repoint joints where not required.

C. Rake out joints as follows, in accordance with procedures demonstrated:

1. Remove mortar from joints to depth of joint width plus 1/8 inch and not less than that required to expose sound, un-weathered mortar. Do not remove unsound mortar more than 2 inches deep; consult Architect for direction.
2. Remove mortar from brick and other masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
3. Do not spall edges of brick or other masonry units or widen joints. Replace or patch damaged brick or other masonry units as directed by Architect.

D. Notify Architect of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.

E. Pointing with Mortar:

1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch (9 mm) until a uniform depth is formed. Fully compact each layer, and allow it to become thumbprint hard before applying next layer.
3. After deep areas have been filled to same depth as remaining joints, point joints by placing mortar in layers not greater than 3/8 inch (9 mm). Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.
4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated. Remove excess mortar from edge of joint by brushing.
5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours, including weekends and holidays.
6. Hairline cracking within mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

F. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage qualified testing agency to perform tests and inspections. Allow inspectors use of lift devices and scaffolding, as needed, to perform inspections.

B. Architect's Project Representatives: Architect will assign Project representatives to help carry out Architect's responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Architect's Project representatives use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.

C. Notify inspectors and Architect's Project representatives in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until inspectors and Architect's Project representatives have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location.

END OF SECTION 04 01 20

SECTION 051200 - STRUCTURAL STEEL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of contract, including general and supplementary conditions and Division 1 specification sections, apply to this section.

1.2 DESCRIPTION OF WORK

A. This section includes structural steel.

1.3 QUALITY ASSURANCE

A. Comply with latest editions of:

1. American Institute of Steel Construction (AISC), "Manual of Steel Construction," including:

   - ANSI/AISC 360, "Specification for Structural Steel Buildings."
   - AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."
   - Research Council on Structural Connections (RCSC), "Specification for Structural Joints Using High-Strength Bolts."

2. American Welding Society, Inc. (AWS)

   a. AWS D1.1 "Structural Welding Code - Steel."

3. Research Council on Structural Connections (RCSC), Educational Bulletin No. 4, "Recommended Erection and Field Inspection Procedures for High-Strength Bolts in Structural Steel Assemblies."
4. American Hot-Dip Galvanizers Association, Inc.; Zinc Institute Inc.

   a. "Inspection Manual for Hot-Dip Galvanized Products."

5. Steel Structures Painting Council (SSPC)

   a. "Surface Preparation Specifications."

B. Qualifications for Welding Work:

1. Qualify welding processes and welding operators in accordance with AWS standards.
2. Provide one of the following certifications for welders to be employed in work.

a. Certification of satisfactorily passing AWS qualification tests within previous 6 months to perform type of welding in work.
b. Work record signed by supervisor showing regular employment within previous 6 months to perform type of welding in work.

C. Qualifications for Fabricator, Detailer, and Erector:

1. Fabricator, Detailer, and Erector of structural steel shall have minimum 3 years experience in fabricating, detailing, and erecting structural steel.

a. Erector Qualifications: Erector shall be AISC Certified Erector, Category CSE.
b. Fabricator Qualifications: Fabricator shall be AISC Certified Fabricator, Category STD.
c. AISC Certification for Fabricators and Erectors may be waived at the discretion of Owner, Architect, and Engineer provided acceptable written quality assurance and quality control plan is submitted.

2. Submit written description of ability.
3. At completion of fabrication, Fabricator shall submit Certificate of Compliance to Special Inspector and Code Enforcement Official stating work was performed in accordance with approved Construction Documents in accordance with Chapter 17 of the 2020 *Building Code of New York State.*

1.4 SPECIAL INSPECTIONS

A. Refer to Specification Section 014533 and Schedule of Special Inspections.

1.5 MATERIAL EVALUATION/QUALITY CONTROL

A. Contractor shall employ testing laboratory acceptable to Engineer and Architect to perform material evaluation tests.

B. Submit testing service qualifications demonstrating experience with similar types of projects.

C. The Registered Design Professionals (RDPs) for Structural Engineering and Architecture will visit construction site at appropriate intervals to determine if work is in general conformance with Contract Documents and specifications. Notify RDPs 48 hours before anticipated time of completion for a given section of work so they may determine if site observations are required. If site observations are required, do not conceal framing until RDPs have had opportunity to make observations.

1.6 SUBMITTALS

A. General: Review of submittals will be for general conformance only. Compliance with requirements for materials, fabrication, erection, and dimensioning of structural steel shall be

Contractor's responsibility. Resubmitted shop drawings shall have revisions identified and dated.

B. Shop Drawings: Submit detailed drawings showing:

1. Submit Shop Drawings showing details of each individual steel shipping piece.
2. Shop and Erection drawings shall show:

    a. Details including cuts, holes, bolts, and other pertinent information.
    b. Material, including ASTM designations and grades or manufacturer’s data as appropriate.
    c. Welds with size, length, and type.
    d. Anchor rod locations.
    e. Sizes and locations of vent and drain holes in galvanized members.

3. Shop drawings shall be checked by detailer and noted as checked in drawings before submitting. Failure to submit checked Shop and Erection drawings will be cause for their return without review. If drawings are not prepared by detailer under direct control of Fabricator, Fabricator shall stamp each drawing and initial or sign stamp to certify review and approval of drawings and conformance with Fabricator’s shop practice and capability.

C. Material Data: Submit to Special Inspector and Engineer laboratory test reports and other data as required to show compliance with specifications. Submit producer’s or manufacturer’s specifications and installation instructions for the following products:

1. Structural steel, including certified copies of mill reports covering chemical and physical properties.
2. High-strength bolts, including nuts and washers.
3. Unfinished bolts and nuts.
4. Structural steel primer paint if used.
5. Welding electrodes.
6. Post-installed anchors (expansion, sleeve, or chemical adhesive) if used.

D. Bolt Certification: Submit to Special Inspector and Engineer certifications that bolts, nuts, and washers furnished comply with specifications. Submit manufacturer's inspection certificates for mill tests. For fasteners to be accepted, lot numbers on kegs, boxes, or bags must correlate with lot numbers shown in accepted test certificates and identification numbers in mill test reports. Manufacturer's symbol and grade markings must appear on bolts and nuts.

E. Field Modifications: Submit drawings showing field modifications required to conform to actual field conditions or as required to correct errors in shop drawings, fabrication, or erection.

F. Erector’s Welding Procedure Specifications: Submit welding procedure specifications for joint types detailed for field welding.

1.7 PRODUCT HANDLING

A. Store material in horizontal position on supports above ground.

B. Protect from weather and keep free of dirt and debris.

C. Handle material carefully so it is not bent or marred.

D. Store bolted fastener components in closed containers protected from moisture and contamination. Remove from protective storage containers only number of fasteners required for one shift. Return fasteners not installed at end of work day to protective storage.

E. Repair or replace damaged materials. Do not incorporate in work fastener components that accumulate rust or dirt.

1.8 WORKMANSHIP

A. Contractor shall be responsible for correction of work not conforming to specified requirements. Correct deficient work as directed by Engineer.

B. Remove work found to be defective. Replace with new acceptable work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials shall be new and free from rust.

B. Rolled-Steel Plates and Bars: ASTM A 36 or ASTM A 572, Grade 50.

C. High-Strength Bolts, Galvanized: ASTM F 3125, Grade A325, Type 1.

D. Anchor Rods: ASTM F 1554, Grade 36 or Grade 55 with Supplement S1, unless otherwise indicated in Drawings.

E. Threaded Rods: ASTM A 36 unless otherwise indicated in Drawings.

F. Nuts: ASTM A 563. Grade and finish to match bolt or rod type.

G. Washers: ASTM F 436 (ASTM F 844 for ASTM A 307 bolts, A 36 rods and F 1554 Grade 36 anchor rods). Finish to match bolt or rod type.

H. Electrodes: E70 and in accordance with AWS.

I. Hot-Dip Galvanizing: Hot-dip galvanize after fabricating in accordance with ASTM A 123. Restraighten members after galvanizing if necessary to be square and true. Items to be hot-dip galvanized are identified in drawings.

J. Galvanizing Touch-up Compound: Zinc-rich, anti-corrosion paint complying with ASTM

A780. "ZRC Galvilite" by ZRC Worldwide; "Roval ZC Galvanizing Repair" by Roval Corporation; "Crown Cold Galvanizing Coating" by Aervoe Industries; "Cold Galvanizing Compound Spray" by Rust-Oleum; or accepted equivalent. Use for field touch-up of hot-dip galvanized surfaces.

K. Chemical Adhesive Anchors:

1. Anchors to solid concrete:

a. Anchors for use when base material temperature is 0°F or greater: "HIT-Ice" by Hilti; "Epcon A7" by ITW Ramset/Red Head; "AC 100 Plus" by Powers Fasteners; "AT Acrylic-Tie" by Simpson/Strong-Tie; or accepted equivalent.
b. Anchors for use when base material temperature is 40°F or greater; "HIT-HY 200 Safe Set System with HIT-Z Rod or Hollow Drill Bit System" or "HIT-RE 500-SD" by Hilti; "Epcon C6" by ITW Ramset/Red Head; "T308 Plus" by Powers Fasteners; "ET Epoxy-Tie" by Simpson/Strong-Tie; or accepted equivalent.

2.2 FABRICATION

A. Fabricate structural steel in strict accordance with reviewed shop drawings and referenced standards.

B. Fabricate and assemble structural material in shop to greatest extent possible.

C. For members to be hot-dip galvanized, comply with the American Galvanizer's Association Design Guide: The Design of Products to be Hot-Dip Galvanized After Fabrication.

D. Anchor Rods: Furnish anchor rods, leveling plate, or other devices necessary for setting anchoring rods required for securing structural steel to foundation, concrete, or masonry.

E. For steel to be hot-dip galvanized, prepare steel by successive immersion in chemical baths of caustic cleaning, pickling, and flux.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

A. Examine conditions under which work shall be erected. Do not proceed until unsatisfactory conditions are corrected.

3.2 TOLERANCES

A. Tolerances shall be within limits in AISC "Code of Standard Practice."

B. Fabrication and mill tolerance shall be within limits in AISC "Standard Mill Practice."

3.3 TOUCH-UP PAINTING

A. Touch up paint damaged galvanized surfaces and welded areas with galvanizing touch-up compound or cold-galvanizing compound applied in accordance with manufacturer's instructions.

B. Prepare surfaces of hot-dip galvanized members where the galvanization was omitted, or damaged in accordance with SSPC-SP3 "Power Tool Cleaning.” Prepare field-welded galvanized members similarly.

C. Remove weld slag before applying touch-up paint.

3.4 TEMPORARY SHORING AND BRACING

A. Provide temporary shoring and bracing members as required with connections of sufficient strength to bear imposed loads.

B. Remove temporary members and connections when permanent members are in place and final connections are made.

3.5 WELDING TO EXISTING STEEL

A. Clean area to be welded using mechanical grinders and solvents to remove paint, rust, and other materials.

B. Use E7018, low-hydrogen electrodes stored in ovens as prescribed by AWS. Preheat steel to be welded and maintain temperatures as prescribed by AWS.

C. Perform Fillet Bend Test, prior to production welding in accordance with AWS D1.1. Notify Engineer if weld separates from base metal.

D. Special Inspector shall perform coupon testing prior to production welding.

END OF SECTION 051200 (11/25)

SECTION 05 40 00 - COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Load-bearing wall framing.
2. Sill sealer/termite barrier.

B. Related Requirements:

1. Section 09 22 16 "Non-Structural Metal Framing" for standard, interior non-load-bearing, metal framing, within height limitations and ceiling-suspension assemblies.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings:

1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners.
2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Welding certificates.

C. Product Certificates: For each type of code-compliance certification for studs and track.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: Accredited by International Accreditation Service (IAS) to IAS AC98 criteria for testing indicated.

B. Welding Qualifications: Qualify procedures and personnel in accordance with the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

C. Comply with AISI S230 for one- and two-family dwellings.

D. Delegated Design Engineer Qualifications: A professional engineer who is legally qualified to practice in New York State and who is experienced in providing engineering services of the type indicated.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect and store cold-formed steel framing from corrosion, moisture staining, deformation, and other damage during delivery, storage, and handling as required in AISI S202.

PART 2 - PRODUCTS

2.1 COLD-FORMED STEEL FRAMING

A. Steel Sheet: ASTM A1003/A1003M, Structural Grade, Type H, metallic coated, of grade and coating designation as follows:

1. Grade: ST50H (ST340H).
2. Coating: G60 (Z180).

B. Steel Sheet for Vertical Deflection Drift Clips: ASTM A653/A653M, structural steel, zinc coated, of grade and coating as follows:

1. Grade: 50 (340), Class 1.
2. Coating: G60 (Z180).

2.2 LOAD-BEARING WALL FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:

1. Minimum Base-Steel Thickness: 0.0538 inch (1.37 mm).
2. Flange Width: 1-5/8 inches (41 mm)

B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and as follows:

1. Minimum Base-Steel Thickness: 0.0538 inch (1.37 mm).
2. Flange Width: 1-1/4 inches (32 mm).

C. Steel Box or Back-to-Back Headers: Manufacturer's standard C-shapes used to form header beams, of web depths indicated, unpunched, with stiffened flanges, and as follows:

1. Minimum Base Steel Thickness: 0.0538 inch (1.37 mm).
2. Flange Width: 1-5/8 inches (41 mm).

2.3 SOFFIT FRAMING

A. Exterior Soffit Framing: Manufacturer's standard C-shaped steel sections, of web depths indicated, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 0.0538 inch (1.37 mm).
2. Flange Width: 1-5/8 inches (41 mm), minimum.

2.4 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories from ASTM A1003/A1003M, Structural Grade, Type H, metallic-coated steel sheet, of same grade and coating designation used for framing members.

B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:

1. Supplementary framing.
2. Bracing, bridging, and solid blocking.
3. Anchor clips.
4. End clips.
5. Foundation clips.
6. Hole-reinforcing plates.

2.5 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A36/A36M, zinc coated by hot-dip process in accordance with ASTM A123/A123M.

B. Power-Actuated Anchors: Fastener systems with working capacity greater than or equal to the design load, in accordance with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

C. Mechanical Fasteners: ASTM C1513, corrosion-resistant-coated, self-drilling, self-tapping, steel drill screws.

1. Head Type: Low-profile head beneath sheathing; manufacturer's standard elsewhere.

D. Welding Electrodes: Comply with AWS standards.

2.6 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: ASTM A780/A780M.

B. Nonmetallic, Nonshrink Grout: Factory-packaged, nonmetallic, noncorrosive, nonstaining grout, complying with ASTM C1107/C1107M, and with a fluid consistency and 30-minute working time.

C. Shims: Load-bearing, high-density, multimonomer, nonleaching plastic; or cold-formed steel of same grade and metallic coating as framing members supported by shims.

D. Sill Sealer Gasket: Closed-cell neoprene foam, 1/4 inch (6 mm) thick, selected from manufacturer's standard widths to match width of bottom track or rim track members as required.

2.7 FABRICATION

A. Fabricate cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened, in accordance with AISI S240 and standards, manufacturer's written instructions, and requirements in this Section.

1. Fabricate framing assemblies using jigs or templates.
2. Cut framing members by sawing or shearing; do not torch cut.
3. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, pneumatic pin fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.

    a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    b. Locate mechanical fasteners and install in accordance with Shop Drawings, with screws penetrating joined members by no fewer than three exposed screw threads.

4. Fasten other materials to cold-formed steel framing by welding, bolting, pneumatic pin fastening, or screw fastening, in accordance with Shop Drawings.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies by means that prevent damage or permanent distortion.

C. Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable variation of 1/8 inch in 10 ft. (1:960) and as follows:

1. Spacing: Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative errors are not to exceed minimum fastening requirements of sheathing or other finishing materials.
2. Squareness: Fabricate each cold-formed steel framing assembly to a maximum out-of-square tolerance of 1/8 inch (3 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, conditions, and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Install load-bearing shims or grout between the underside of load-bearing wall bottom track and the top of foundation wall or slab at locations with a gap larger than 1/4 inch (6 mm) to ensure a uniform bearing surface on supporting concrete or masonry construction.

B. Install sill sealer gasket at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

C. Install sill sealer gasket/termite barrier in accordance with manufacturer's written instructions at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

3.3 COLD-FORMED STEEL FRAMING INSTALLATION, GENERAL

A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed steel framing in accordance with ASTM C1007, AISI S202, and manufacturer's written instructions unless more stringent requirements are indicated.

C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.

1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch (1.6 mm).

D. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.

1. Cut framing members by sawing or shearing; do not torch cut.
2. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.

a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

b. Locate mechanical fasteners, install in accordance with Shop Drawings, and comply with requirements for spacing, edge distances, and screw penetration.

E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

F. Install temporary bracing and supports to secure framing and support loads equal to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

G. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.

H. Install insulation, specified in Section 072100 "Thermal Insulation," in framing-assembly members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.

I. Fasten hole-reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.

3.4 LOAD-BEARING WALL FRAMING INSTALLATION

A. Install continuous top and bottom track sized to match studs. Align track accurately and securely anchor at corners and ends, and at spacings as follows:

B. Squarely seat studs against top and bottom track, with gap not exceeding 1/8 inch (3 mm) between the end of wall-framing member and the web of track.

1. Fasten both flanges of studs to top and bottom track.
2. Space studs as follows:

a. Stud Spacing: 16 inches (406 mm).

C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar configurations.

D. Align studs vertically where floor framing interrupts wall-framing continuity. Where studs cannot be aligned, continuously reinforce track to transfer loads.

E. Align floor and roof framing over studs in accordance with AISI S240, Section C3.5.2. Where framing cannot be aligned, continuously reinforce track to transfer loads.

F. Anchor studs abutting structural columns or walls, including masonry walls, to supporting structure.

G. Install headers over wall openings wider than stud spacing. Locate headers above openings. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip-angle connectors, web stiffeners, or gusset plates.

1. Frame wall openings with not less than a double stud at each jamb of frame as indicated on Shop Drawings. Fasten jamb members together to uniformly distribute loads.
2. Install track and jack studs above and below wall openings. Anchor track to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs.

H. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, casework, heavy trim, furnishings, and similar work requiring attachment to framing.

1. If the supplementary support is not indicated, comply with stud manufacturer's written recommendations and industry standards in each case, considering weight or load resulting from item supported.

I. Install horizontal bridging in stud system, spaced vertically 48 inches (1220 mm). Fasten at each stud intersection.

J. Install steel sheet diagonal bracing straps to both stud flanges; terminate at and fasten to reinforced top and bottom track. Fasten clip-angle connectors to multiple studs at ends of bracing and anchor to structure.

K. Install miscellaneous framing and connections, including supplementary framing, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.5 INSTALLATION TOLERANCES

A. Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 ft. (1:960) and as follows:

1. Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error are not to exceed minimum fastening requirements of sheathing or other finishing materials.

3.6 REPAIR

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint in accordance with ASTM A780/A780M and manufacturer's written instructions.

3.7 FIELD QUALITY CONTROL

A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Field and shop welds will be subject to testing and inspecting.

C. Testing agency will report test results promptly and in writing to Contractor and Architect.

D. Cold-formed steel framing will be considered defective if it does not pass tests and inspections.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.8 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 054000

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood products.
2. Wood-preservative-treated lumber.
3. Miscellaneous lumber.
4. Plywood backing panels.

B. Related Requirements:

1. Section 061600 "Sheathing" for she athing, subflooring, and underlayment.

1.2 DEFINITIONS

A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.

B. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal size in least dimension.

C. Lumber grading agencies, and abbreviations used to reference them, include the following:

1. NeLMA: Northeastern Lumber Manufacturers' Association.
2. NLGA: National Lumber Grades Authority.
3. SPIB: The Southern Pine Inspection Bureau.
4. WCLIB: West Coast Lumber Inspection Bureau.
5. WWPA: Western Wood Products Association.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.

3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency in accordance with ASTM D5664.
4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

1.4 INFORMATIONAL SUBMITTALS

A. Material Certificates:

1. For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
2. For preservative-treated wood products. Indicate type of preservative used and net amount of preservative retained.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS

A. Lumber: Comply with DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry wood products.
3. Dress lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content:

1. Boards: 19 percent.
2. Dimension Lumber: 15 percent for 2-inch nominal (38-mm actual) thickness or less; 19 percent for more than 2-inch nominal (38-mm actual) thickness unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1, use categories as follows:

1. UC1: Interior construction not in contact with ground or subject to moisture. Include all rough carpentry.
2. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
3. After treatment, redry boards dimension lumber to 19 percent maximum moisture content.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat all rough carpentry unless otherwise indicated.

2.3 FIRE-RETARDANT-TREATED LUMBER

A. General: Where fire-retardant-treated materials are indicated, materials are to comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested in accordance with ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.

1. Treatment is not to promote corrosion of metal fasteners.
2. Exterior Type: Treated materials are to comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering in accordance with ASTM D2898. Use for exterior locations and where indicated.
3. Design Value Adjustment Factors: Treated lumber is to be tested according to ASTM D5664 and design value adjustment factors are to be calculated according to ASTM D6841.

C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent. Kiln-dry plywood after treatment to maximum moisture content of 15 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency and other information required by authorities having jurisdiction.

1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece

E. Application: Treat items indicated on Drawings, and the following:

1. Concealed blocking.
2. Plywood backing panels.

2.4 MISCELLANEOUS LUMBER

A. Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Furring.
4. Grounds.

B. Dimension Lumber Items: Construction or No. 2 grade lumber of any of the following species:

1. Hem-fir (north); NLGA.
2. Mixed southern pine or southern pine; SPIB.
3. Spruce-pine-fir; NLGA.
4. Hem-fir; WCLIB or WWPA.
5. Northern species; NLGA.

C. Concealed Boards: 19percent maximum moisture content and any of the following species and grades:

1. Mixed southern pine or southern pine; No. 2grade; SPIB.
2. Hem-fir or hem-fir (north); Construction or No. 2 Common grade; NLGA, WCLIB, or WWPA.
3. Eastern softwoods; No. 2 Common grade; NeLMA.
4. Northern species; No. 2 Common grade; NLGA.
5. Western woods; Construction or No. 2 Common grade; WCLIB or WWPA.

D. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used if it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.5 FASTENERS

A. General: Fasteners are to be of size and type indicated and comply with requirements specified in this article for material and manufacture. Provide nails or screws, in sufficient length, to penetrate not less than 1-1/2 inches into wood substrate.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners of Type 304 stainless steel.

B. Nails, Brads, and Staples: ASTM F1667.

C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 ICC-ES AC58 ICC-ES AC193 or ICC-ES AC308 as appropriate for the substrate.

2.6 METAL FRAMING ANCHORS

A. Post Bases: Adjustable-socket type for bolting in place with standoff plate to raise post 1 inch (25 mm) above base and with 2-inch- (50-mm-) minimum side cover, socket 0.062 inch (1.6 mm) thick, and standoff and adjustment plates 0.108 inch (2.8 mm) thick.

B. Materials: Unless otherwise indicated, fabricate from the following materials:

1. Heavy-Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 (Z550) coating designation; and not less than 0.036 inch (0.9 mm) thick.

a. Use for wood-preservative-treated lumber and where indicated.

2. Stainless steel bars and shapes complying with ASTM A276/A276M, Type 304.

a. Use for exterior locations and where indicated.

2.7 MISCELLANEOUS MATERIALS

A. Sill-Sealer Gaskets:

1. Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to suit width of sill members indicated.
2. Self-adhering sheet consisting of 64 mils (1.6 mm) of rubberized asphalt laminated on one side to a 4-mil- (0.10-mm-) thick, polyethylene-film reinforcement, and with release liner on adhesive side.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Set work to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

B. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant-treated plywood backing panels with classification marking of testing agency exposed to view.

C. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

D. Install sill sealer gasket/termite barrier in accordance with manufacturer's written instructions at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

E. Do not splice structural members between supports unless otherwise indicated.

F. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.

G. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:

1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches (2438 mm) o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal (38-mm actual) thickness.
3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. (9.3 sq. m) and to solidly fill space below partitions.

H. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

I. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

J. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

K. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.10.1, "Fastening Schedule," in ICC's International Building Code (IBC).

L. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 INSTALLATION OF WOOD BLOCKING AND NAILERS

A. Install where indicated and where required for screeding **or** attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach wood blocking to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches (38 mm) wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 INSTALLATION OF WOOD FURRING

A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

B. Furring to Receive Plywood or Hardboard Paneling: Install 1-by-3-inch nominal- (19-by-63-mm actual-) size furring vertically at 24 inches (610 mm) o.c.

C. Furring to Receive Gypsum Board or Plaster Lath: Install 1-by-2-inch nominal- (19-by-38-mm actual-) size furring vertically at 16 inches (406 mm) o.c.

3.4 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 06 41 00 - ARCHITECTURAL WOOD CASEWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood Casework.
2. Wood materials.
3. Casework hardware.
4. Accessories.
5. Shop finishing.

B. Related Requirements:

1. Section 06 10 00 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing cabinets that are concealed within other construction before cabinet installation.
2. Section 09 22 16 "Non-Structural Metal Framing" for standard interior non-load bearing, metal-stud-framing required for anchoring cabinets.
3. Section 12 36 23 "Plastic-Laminate-Clad Countertops."

1.2 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to support loads imposed by installed and fully loaded cabinets.

B. Coordinate attributes with wood paneling as specified in Section 06 42 16 "Flush Wood Paneling."

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review locations and method of attachment of backing required for casework installation.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components, and profiles and finishes for casework.
2. Include rated capacities, operating characteristics, profiles, and finishes for hardware.

B. Shop Drawings:

1. Plans, elevations, sections, and attachment details.

a. Show large-scale details.
b. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
c. Show locations and sizes of cutouts and holes for items installed in architectural cabinets.
d. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.

2. Apply AWI's Quality Certification Program (hereafter AWI QCP) label to Shop Drawings.

C. Samples for Verification: Provide a minimum of three samples showing the full range of color and/or grain to be expected in the finished work, for the following.

1. Veneer Leaves: Representative of and selected from flitches to be used for transparent-finished cabinets. Samples to show the full range of color and grain to be expected.
2. Veneer Panel for Transparent Finish: 8 by 8 inches by 1/4 inch, representative of and selected from flitches to be used for transparent-finished casework.

3. Corner Pieces:

a. Cabinet-front frame joints between stiles and rails and at exposed end pieces, 18 inches high by 18 inches wide by 6 inches deep.
b. Miter joints for standing trim.

4. Exposed Cabinet Hardware and Accessories: One full-size unit for each type and finish.

1.5 INFORMATIONAL SUBMITTALS

A. Test Reports: Valid KCMA "Performance Quality Test Report" indicating compliance with specified ANSI/AWI 0641 Structural Performance Duty Level.

B. Certification Reports:

1. Provide certificates from AWI QCP indicating woodwork and installation comply with requirements of aesthetic grade and duty level specified.

C. Product Certificates: For each type of product.

D. Field Quality Control Reports.

E. Qualification Statements: For manufacturer and Installer.

1.6 CLOSEOUT SUBMITTALS

A. Quality Standard Compliance Certificates: AWI QCP Certificate.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

1. Manufacturer's Certification: Licensed participant in AWI's Quality Certification Program.

B. Installer Qualifications: Manufacturer of products.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.9 FIELD CONDITIONS

A. Environmental Limitations with Humidity Control: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F (16 and 32 deg C) and relative humidity between 30 and 55 percent during the remainder of the construction period.

B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed/concealed by construction and indicate measurements on Shop Drawings.

C. Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements.

B. Quality Standard: Provide cabinets that comply with KCMA A161.1.

1. KCMA Certification: Provide cabinets with KCMA's "Certified Cabinet" seal affixed in a semi-exposed location of each unit and showing compliance with the above standard.

2.2 ARCHITECTURAL WOOD CABINETS

A. Basis of Design: Architectural Wood cabinets manufactured by: Triangle Cabinet & Specialty, 116 Park Street, Whitney Point, NY 13862, 607 692 2952, TriCabSpecialty@Gmail.com; trianglecabinetspecialty.com, and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed or comparable products by the following, provided products are in compliance with the performance criteria:

1. T Squared Custom Millwork Inc., 127 Russell Lane, Oxford, NY 13830, 607 843 2442, info@t2millwork.com; t2millwork.com.
2. Chicone Cabinetmakers, 302 W. South Street, Montour Falls, NY 14865, 607 535 6540, sales@chicone.com; chicone.com.

2.3 SOURCE LIMITATIONS

A. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of paneling, wood-veneer-faced architectural cabinets and wood trim.

B. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of cabinets indicated for construction, finishes, installation, and other requirements.

C. Provide certificates from KCMA certification program indicating that woodwork complies with requirements of grades specified.

D. Architectural Woodwork Standards Grade: Premium.

E. Type of Construction: Face Frame.

F. Door and Drawer-Front Style: Reveal overlay.

1. Reveal Dimension: 1/2 inch (13 mm).
2. Design: Stile and rail.

2.4 CABINET MATERIALS

A. Hardwood Lumber: Kiln dried to 7 percent moisture content.

B. Softwood Lumber: Kiln dried to 10 percent moisture content.

C. Hardwood Plywood: HPVA HP-1.

D. Particleboard: ANSI A208.1, Grade M-2.

E. MDF: Medium-density fiberboard, ANSI A208.2, Grade MD.

F. Hardboard: ANSI A135.4, Class 1 tempered.

G. Exposed Materials:

1. Exposed casework members: Match Existing Wood Cabinet species, cut, adjacent veneer match, vertical panel matching, exposed panel edges, core construction, finish and other requirements.
2. Plywood: Hardwood plywood with face veneer of species indicated, with Grade A faces and Grade C backs of same species as faces.

H. Semi-exposed Materials: Unless otherwise indicated, provide the following:

1. Solid Wood: Sound hardwood lumber, selected to eliminate appearance defects. Same species as exposed surfaces or stained to be compatible with exposed surfaces.
2. Plywood: Hardwood plywood with Grade C faces and not less than Grade 3 backs of same species as faces. Face veneers of same species as exposed surfaces or stained to be compatible with exposed surfaces.

I. Concealed Materials: Solid wood or plywood, of any hardwood or softwood species, with no defects affecting strength or utility; particleboard; MDF; or hardboard.

J. General:

1. Provide cabinet hardware and accessory materials associated with architectural cabinets complying with BHMA A156.9, except for items specified in Section 08 71 00 "Door Hardware."
2. Unless otherwise indicated, comply with KCMA for duty level and grade of architectural cabinets indicated for construction, finishes, installation, and other requirements.
3. Provide certificates from KCMA indicating that woodwork and installation comply with requirements of aesthetic grade and duty level specified.

K. Cabinet Finishes: Provide the following finishes as indicated in Finish Legend on Drawings.

1. Base Cabinets: Match Existing Polyurethane Finish
2. Wall Cabinets: Match Existing Polyurethane Finish.
3. Exposed Cabinet End Finish: Match face finish.

L. Cabinet End Panel Construction: 1/2-inch- (13-mm-) thick particleboard or 3/8-inch- (9.5-mm-) thick plywood.

M. Cabinet Tops and Bottoms: 1/2-inch- (13-mm-) thick particleboard or 3/8-inch- (9.5-mm-) thick plywood.

1. Fully support in rabbets in and secure to end panels, front frame and back rail.

N. Back, Top and Bottom Rails: 3/4-by-2-1/2-inch (19-by-63-mm) solid wood, interlocking with end panels and rabbeted to receive top and bottom panels. Back rails secured under pressure with glue and with mechanical fasteners.

O. Wall-Hung-Unit Back Panels: 3/16-inch- (4.8-mm-) thick plywood fastened to rear edge of end panels and to top and bottom rails.

P. Base-Unit Back Panels: 3/16-inch- (4.8-mm-) thick plywood fastened to rear edge of end panels and to top and bottom rails.

Q. Shelves: 3/4-inch- (19-mm-) thick particleboard or 5/8-inch- (16-mm-) thick plywood.

R. Joinery: Rabbet backs flush into end panels and secure with concealed mechanical fasteners. Connect tops and bottoms of wall cabinets and bottoms and stretchers of base cabinets to ends and dividers with mechanical fasteners. Rabbet tops, bottoms, and backs into end panels.

S. Factory Finishing: Finish cabinets at factory.

2.5 CABINET HARDWARE AND ACCESSORIES

A. Cabinet Hardware: Provide cabinet hardware and accessory materials associated with architectural cabinets except for items specified in Section 08 71 00 "Door Hardware."

B. Butt Hinges: Concealed European-style, self-closing hinges with minimum swing of 105 degrees. Finish: Match Knobs.

C. Knobs:

1. Back-Mounted Match Existing Knobs: ANSI/BHMA A156.9, B02041.

D. Shelf Rests and Standards:

1. Shelf Rests: ANSI/BHMA A156.9, B04013; metal.

E. Locks for Hinged-Doors: Cylindrical (cam) type, five-pin tumbler, brass with chrome-plated finish, and complying with ANSI/BHMA A156.11, Grade 1.

F. Door Bumpers: Manufacturer's standard self-adhering clear silicone pads.

G. Hardware Finish:

1. Exposed Hardware: Provide finish that complies with ANSI/BHMA A156.18 for ANSI/BHMA finish number indicated.

    a. Bright Chromium Plated: ANSI/BHMA 625 for brass or bronze base; ANSI/BHMA 651 for steel base.

2. Concealed Hardware: Manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.

2.6 ACCESSORIES

A. Grommets:

1. Wire-Management Grommets: Circular, grommets and matching caps with slot for wire passage.

    a. Finish: Molded plastic.
    b. Outside Diameter: 2 inches (51 mm).
    c. Color: Black.

2.7 FABRICATION

A. Fabricate architectural cabinets to dimensions, profiles, and details indicated. Ease sharp edges and corners.

B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

1. Notify Architect seven days in advance of dates and times architectural cabinet fabrication will be complete.
2. Trial fit assemblies at manufacturer's shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.

C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

2.8 SHOP FINISHING

A. Finish architectural cabinets at manufacturer's shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.

B. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural cabinets, as applicable to each unit of work.

1. Back-Priming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of cabinets.

C. Transparent Finish:

1. Aesthetic Performance Grade: Premium.
2. Finish System: polyurethane, water-based to match existing wood cabinet finish.
3. Wash Coat for Closed-Grain Woods: Apply wash-coat sealer to cabinets made from closed-grain wood before staining and finishing.
4. Staining: None required Match Architect's sample.
5. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter per ASTM D523.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of reinforcements, and other conditions affecting performance of the Work.

1. Confirm location and adequacy of blocking and supports required for installation.
2. Verify size and locations of cutouts for appliances, special equipment, sinks, plumbing, and other items to be mounted in or adjacent to casework.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

3.3 CASEWORK INSTALLATION

A. Install casework to comply with requirements of the structural and aesthetic performance specified.

B. Assemble cabinets and complete fabrication at Project site to extent that it was not completed in the shop.

C. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches using concealed shims.

1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
3. Maintain veneer sequence matching of cabinets with transparent finish.

D. Anchor cabinets in accordance with kcma requirements or tested method to anchors or blocking built in or directly attached to framing or substrates.

E. Shop Finishes: Touch up finishing after installation of architectural cabinets. Fill nail holes with matching filler.

1. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are shop applied.

a. Use filler matching finish of items being installed.

F. Field Finishing: See Section 099123 "Interior Painting" for finishing of installed architectural cabinets.

3.4 FIELD QUALITY CONTROL

A. Inspections: Provide inspection of installed Work through KCMA's Quality Certification Program certifying that casework, including installation, complies with requirements of ANSI/AWI 0620 for the specified grade.

1. AWI QCP Inspector to prepare and submit inspection report.

3.5 ADJUSTING AND CLEANING

A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects. Where impossible to repair, replace architectural cabinets. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware and other moving parts to function smoothly.

C. Clean cabinets on exposed and semi-exposed surfaces. Touch up finishes to restore damaged or soiled areas.

END OF SECTION 06 41 00

SECTION 06 42 16 - FLUSH WOOD PANELING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Flush wood paneling (wood-veneer wall surfacing).
2. Installation materials.

B. Related Requirements:

1. Section 06 10 00 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing paneling that is concealed within other construction before paneling installation.

1.2 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that paneling can be installed as indicated.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For flush wood paneling.

1. Include plans, elevations, sections, and attachment details.
2. Show details full size.
3. Show locations and sizes of furring and blocking, including concealed blocking specified in other Sections.
4. For paneling produced from premanufactured sets, show finished panel sizes, set numbers, sequence numbers within sets, and method of cutting panels to produce indicated sizes.
5. For paneling veneered in fabrication shop, show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.
6. Apply AWI Quality Certification Program label to Shop Drawings.

C. Samples for Verification: For the following:

1. Lumber for Transparent Finish: Not less than 5 inches (125 mm) wide by 12 inches (300 mm) long, for each species and cut, finished on one side and one edge.
2. Veneer Leaves: Representative of and selected from flitches to be used for transparent-finished paneling.
3. Veneer-Faced Panel Products for Transparent Finish: 8 by 10 inches (200 by 250 mm), for each species and cut. Include at least one face-veneer seam and finish as specified.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For each type of product.

C. Quality Standard Compliance Certificates: AWI Quality Certification Program.

D. Evaluation Reports: For fire-retardant-treated materials, from ICC-ES.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Shop Certification: AWI’s Quality Certification Program accredited participant.

C. Installer Qualifications: Fabricator of products

1.7 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver paneling until painting and similar operations that might damage paneling have been completed in installation areas. Store paneling in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.8 FIELD CONDITIONS

A. Environmental Limitations with Humidity Control: Do not deliver or install paneling until building is enclosed, wet-work is complete, and HVAC system is operating and will maintain temperature between 60 and 90 deg F (16 and 32 deg C) and relative humidity between 25 and 55 percent during the remainder of the construction period.

B. Field Measurements: Where paneling is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support paneling by field measurements before being enclosed/concealed by construction and indicate measurements on Shop Drawings.

C. Established Dimensions: Where paneling is indicated to fit to other construction, establish dimensions for areas where woodwork is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Architectural Wood Paneling manufactured by: Triangle Cabinet & Specialty, 116 Park Street, Whitney Point, NY 13862, 607 692 2952, TriCabSpecialty@Gmail.com; trianglecabinetspecialty.com, and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed or comparable products by the following, provided products are in compliance with the performance criteria:

1. T Squared Custom Millwork Inc., 127 Russell Lane, Oxford, NY 13830, 607 843 2442, info@t2millwork.com; t2millwork.com.
2. Chicone Cabinetmakers, 302 W. South Street, Montour Falls, NY 14865, 607 535 6540, sales@chicone.com; chicone.com.

2.2 SOURCE LIMITATIONS

A. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of paneling, wood-veneer-faced architectural cabinets and wood trim.

2.3 PANELING FABRICATORS

A. Fabricators: Subject to compliance with requirements, provide products by available fabricators offering products that may be incorporated into the Work.

2.4 PANELING, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of flush wood paneling (wood-veneer wall surfacing) indicated for construction, finishes, installation, and other requirements.

1. Provide inspections of fabrication and installation together with labels and certificates from AWI certification program indicating that woodwork complies with requirements of grades specified.

2.5 FLUSH WOOD PANELING (WOOD-VENEER WALL SURFACING)

A. Grade: Premium.

1. Match Existing Wood Paneling species, cut, adjacent veneer match, vertical panel matching, exposed panel edges, core construction, finish and other requirements.

B. Submit samples for approval prior to manufacturing.

2.6 Panel Core Construction: Particleboard or MDF.

A. Thickness: As indicated on Drawings.

B. Exposed Panel Edges: Applied solid-wood banding 11/16 inch (18 mm) thick by depth of panels.

C. Assemble panels by gluing and concealed fastening.

D. Materials, General: Provide materials that comply with requirements of referenced quality standard for each quality grade specified unless otherwise indicated.

E. Wood Moisture Content: 5 to 10 percent.

F. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each quality grade specified unless otherwise indicated.

1. MDF: ANSI A208.2, Grade 130.
2. Particleboard (Medium Density): ANSI A208.1, Grade M-2 Grade M-2-Exterior Glue.
3. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.

2.7 INSTALLATION MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber Fire-retardant-treated softwood lumber, kiln-dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls.

C. Adhesive Installation: Product recommended by panel fabricator for each substrate for secure anchorage.

2.8 FABRICATION

A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.

B. Arrange paneling in shop or other suitable space in proposed sequence for examination by Architect. Mark units with temporary sequence numbers to indicate position in proposed layout.

1. Lay out one elevation at a time if approved by Architect.
2. Notify Architect seven days in advance of the date and time when layout will be available for viewing.
3. Provide lighting of similar type and level as that of final installation for viewing layout unless otherwise approved by Architect.
4. Rearrange paneling as directed by Architect until layout is approved.
5. Do not trim end units and other nonmodular-size units to less than modular size until after Architect's approval of layout.
6. Obtain Architect's approval of layout before start of assembly. Mark units and Shop Drawings with assembly sequence numbers based on approved layout.

C. Complete fabrication, including assembly, to maximum extent possible, before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

1. Notify Architect seven days in advance of the dates and times paneling fabrication will be complete.

D. Shop cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

2.9 SHOP FINISHING

A. General: Finish paneling at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.

B. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing paneling, as applicable to each unit of work.

1. Back Priming: Apply two coats of sealer or primer, compatible with finish coats, to concealed surfaces of paneling.
2. Staining: None required.
3. Transparent Finish: Match Existing:

a. Grade: Premium.
b. Finish: System - 11, catalyzed polyurethane.
c. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter per ASTM D523.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition paneling to humidity conditions in installation areas.

B. Before installing paneling, examine shop-fabricated work for completion and complete work as required, including removal of packing and back-priming.

3.2 INSTALLATION

A. Grade: Install paneling to comply with quality standard grade of paneling to be installed.

B. Install paneling level, plumb, true in line, and without distortion. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm). Install with no more than 1/16 inch in 96-inch (1.6 mm in 2400-mm) vertical cup or bow and 1/8 inch in 96-inch (3 mm in 2400-mm) horizontal variation from a true plane.

C. Anchor paneling to supporting substrate with blind nailing.

1. Do not use face fastening unless otherwise indicated.

D. Make final field cuts as necessary complying with quality control standards as established for all shop fabrication. Apply field finish to match factory finish at cut ends of each slat.

E. Complete finishing work specified in this Section to extent not completed at shop or before installation of paneling. Fill nail holes with matching filler where exposed.

1. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are shop applied.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective paneling, where possible, to eliminate defects. Where not possible to repair, replace paneling. Adjust for uniform appearance.

B. Clean paneling on exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 06 42 16

SECTION 07 14 13 - HOT FLUID-APPLIED RUBBERIZED ASPHALT WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Hot fluid-applied rubberized asphalt waterproofing.
2. Accessory waterproofing system materials.

B. Related Requirements:

1. Section 072100 "Thermal Insulation" for below-grade foundation insulation.
2. Section 079200 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.
3. Section 321400 "Unit Paving" for plaza-deck pavers set on setting beds.

1.2 COORDINATION

A. Coordinate Work under this Section with adjacent concrete foundation work, including fill.

B. Coordinate requirements for concrete formwork to provide suitable substrate for waterproofing primer and to minimize penetrations through waterproofing.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Indicate locations and extent of waterproofing.
2. Details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, expansion-joint conditions, tie-ins with adjoining waterproofing, and other termination conditions.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Statements: For Installer.

B. Field quality-control reports.

C. Sample warranties.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Entity that employs installers and supervisors who are trained and certified by waterproofing manufacturer.

1.7 WARRANTY

A. Manufacturer's Special Warranty: Manufacturer agrees to repair or remove and replace waterproofing that fails to remain watertight within specified warranty period.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Waterproofing System Basis of Design: 790-11 Hot Rubberized Asphalt manufactured by Henry Company, 336 Coldstream Rd, Kimberton, PA 19442, 310 955 9200; henry.com. and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed or comparable products manufactured by the following, provided products are in compliance with the performance criteria:

1. 6100 Hot-Applied Rubberized Asphalt Waterproofing Membrane manufactured by Tremco Construction Products Group Inc., 3735 Green Road, Beachwood, OH 44122, 800 321 7906; tremcocpg.com.
2. SikaShield® HM manufactured by Sika Master Builders, Sika Corporation, 201 Polito Ave, Lyndhurst, NJ 07071, 201 933 8800; usa.sika.com.
3. Or other comparable Manufacturer’s products.

2.2 ACCESSORY WATERPROOFING SYSTEM MATERIALS

A. General: Accessory materials as recommended in writing by waterproofing manufacturer for intended use and compatible with one another and with waterproofing.

B. Asphalt Primer: ASTM D41/D41M. as recommended by manufacturer of waterproofing system.

C. Elastomeric Sheet Flashing: Manufacturer's standard uncured sheet neoprene flashing sheet.

1. Adhesive: Manufacturer's standard contact adhesive.

D. Metal Termination Bars: Manufacturer's standard, predrilled, stainless steel or aluminum termination bars; approximately 1 by 1/8 inch thick; with stainless steel anchors.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. Verify that concrete has cured and aged for minimum time period as recommended in writing by waterproofing manufacturer.
2. Verify that substrate is visibly dry and within the moisture limits as recommended in writing by waterproofing manufacturer. Test for capillary moisture by plastic sheet method in accordance with ASTM D4263.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean and prepare substrates in accordance with waterproofing manufacturer's written instructions. Provide clean, dust-free, and dry substrate for waterproofing application.

B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.

C. Close off deck drains and other deck penetrations to prevent spillage and migration of waterproofing fluids.

D. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, acid residues, and other penetrating contaminants or film-forming coatings from concrete.

E. Remove fins, ridges, and other projections, and fill honeycomb, aggregate pockets, holes, and other voids.

F. Coordinate with Owner for impact to air-intake equipment in the vicinity of the Work. Cover or filter air-intake louvers before proceeding with work that could affect indoor air quality or that could activate smoke detectors in the ductwork.

3.3 PREPARATION AT TERMINATIONS, PENETRATIONS, AND CORNERS

A. Prepare surfaces at terminations and penetrations through waterproofing and at expansion joints, drains, sleeves, and corners in accordance with waterproofing manufacturer's written instructions and to recommendations in ASTM C1471/C1471M.

3.4 TREATMENT OF JOINTS AND CRACKS

A. Prepare, treat, rout, and fill joints and cracks in substrate in accordance with waterproofing manufacturer's written instructions and to recommendations in ASTM C1471/C1471M. Before coating surfaces, remove dust and dirt from joints and cracks in accordance with ASTM D4258.

1. Adhere strip of elastomeric sheet to substrate in a layer of hot rubberized asphalt. Extend elastomeric sheet a minimum of 6 inches on each side of moving joints and cracks or joints and cracks exceeding 1/8 inch thick, and beyond deck drains and penetrations. Apply second layer of hot fluid-applied rubberized asphalt over elastomeric sheet.
2. Embed strip of reinforcing fabric into a layer of hot rubberized asphalt. Extend reinforcing fabric a minimum of 6 inches on each side of nonmoving joints and cracks not exceeding 1/8 inch thick, and beyond roof drains and penetrations.

    a. Apply second layer of hot fluid-applied rubberized asphalt over reinforcing fabric.

B. At expansion joints and discontinuous deck-to-wall or deck-to-deck joints, bridge joints with elastomeric sheet extended a minimum of 6 inches on each side of joints and adhere to substrates in a layer of hot rubberized asphalt. Apply second layer of hot fluid-applied rubberized asphalt over elastomeric sheet.

3.5 INSTALLATION OF SHEET FLASHING

A. Install sheet flashing at terminations of waterproofing membrane in accordance with manufacturer's written instructions.

B. Prime substrate with asphalt primer.

1. Apply primer in accordance with product specific technical data sheet and Waterproofing Manufacturer details.
2. Limit primer installation to areas where waterproofing is installed by end of day.
3. Do not over apply primer; excessive and ponding primer is not recommended.
4. Allow primer to dry in accordance with product specific technical data sheet prior to waterproofing installation

C. Install sheet flashing and adhere to deck and wall substrates in a layer of hot rubberized asphalt.

D. Bond modified bituminous flashing sheet to substrate as follows:

1. Adhere SBS-modified bituminous flashing sheet to substrate in a layer of hot fluid-applied rubberized asphalt, or torch apply APP-modified bituminous flashing sheet to substrate as standard with manufacturer.

E. Extend sheet flashing up walls or parapets a minimum of 8 inches above plaza-deck pavers and 6 inches onto deck to be waterproofed.

F. Install termination bars and mechanically fasten to top of sheet flashing at terminations and perimeter of waterproofing.

3.6 WATERPROOFING INSTALLATION

A. General: Apply waterproofing in accordance with manufacturer's written instructions.

B. Start installing waterproofing in presence of manufacturer's technical representative.

C. Apply primer over prepared substrate at manufacturer's recommended rate and allow it to dry.

D. Heat rubberized asphalt in accordance with manufacturer's written instructions.

1. Heat rubberized asphalt in an oil- or air-jacketed melter with mechanical agitator specifically designed for heating rubberized asphalt.

E. Reinforced Waterproofing Membrane Applications: Apply hot rubberized asphalt to substrates and adjoining surfaces indicated. Spread to a thickness of 90 mils (2.3 mm); embed reinforcing fabric, overlapping sheets 2 inches (50 mm); spread another 125-mil- (3.2-mm-) thick layer to provide a uniform, reinforced, seamless membrane 215 mils (5.5 mm) thick.

F. Cure waterproofing, taking care to prevent contamination and damage to membrane.

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

1. Testing agency to verify thickness of waterproofing during application for each 600 sq. ft. of installed waterproofing or part thereof.

B. Additional Tests and Inspections:

1. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

2. Waterproofing system will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.8 PROTECTION AND CLEANING

A. Protect waterproofing system from damage and wear during remainder of construction period.

B. Provide temporary coverings where material is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

C. Correct deficiencies in or remove waterproofing system that does not comply with requirements, repair substrates, and repair or reinstall waterproofing system to a condition free of damage and deterioration at time of Substantial Completion and in accordance with warranty requirements.

D. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 14 13

SECTION 07 19 00 - WATER REPELLENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. MPI-approved water repellents

B. Related Requirements:

1. Section 030130 "Maintenance of Cast-in-Place Concrete" for high-build penetrating polymer sealers.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include manufacturer's printed statement of VOC content.
2. Include manufacturer's recommended number of coats for each type of substrate and spreading rate for each separate coat.
3. Include printout of current "MPI Approved Products List" for each product category specified in Part 2 that specifies water repellents approved by MPI, with the proposed product highlighted.

B. Samples: For each type of water repellent and substrate indicated, 12 by 12 inches in size, with specified water-repellent treatment applied to half of each Sample.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Applicator.

B. Product Certificates: For each type of water repellent.

C. Sample Warranty: For special warranty.

1.5 QUALITY ASSURANCE

A. Applicator Qualifications: An employer of workers trained and approved by manufacturer.

B. MPI Standards: Comply with MPI standards indicated and provide water repellents listed in its "MPI Approved Products List."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 35 deg F and not more than 110 deg F, in accordance with manufacturer's written instructions.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.
3. Protect materials from direct sunlight.

1.7 FIELD CONDITIONS

A. Limitations: Proceed with application only when the following existing and forecasted weather and substrate conditions permit water repellents to be applied in accordance with manufacturers' written instructions and warranty requirements:

1. Ambient air temperature is above 50 deg F (10 deg C) and below 95 deg F (35 deg C) and will remain so for duration of application and initial curing period.
2. Substrate is not frozen and substrate-surface temperature is above 50 deg F (10 deg C) and below 95 deg F (35 deg C), and is a minimum of 5 deg F (3 deg C) above dew point.
3. Rain, snow, fog, or mist is not predicted during application or within 24 hours after completion, unless otherwise permitted by manufacturer.
4. Substrates are dry and free of standing water, surface moisture, frost, or dampness; not less than 24 hours have passed since surfaces were last wet, unless manufacturer permits otherwise.
5. Wind conditions do not exist that could cause contamination of adjacent surfaces, overspray, or nonuniform film thickness.
6. Substrates have achieved minimum curing age and moisture content required by manufacturer prior to application.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer and Applicator agree(s) to repair or replace materials that fail to maintain water repellency specified in "Performance Requirements" Article within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Waterproofing System Basis of Design: Ardex LP 16376 Gallon #635 Clear Concentrate Seal manufactured by Henry Company, 336 Coldstream Rd, Kimberton, PA 19442, 310 955 9200; henry.com. and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed or comparable products manufactured by the following, provided products are in compliance with the performance criteria:

1. TREMproof PUMA: manufactured by Tremco Construction Products Group Inc., 3735 Green Road, Beachwood, OH 44122, 800 321 7906; tremco cpg.com.
2. Sikagard 705L Silane Based Water Repellent manufactured by Sika Master Builders, Sika Corporation, 201 Polito Ave, Lyndhurst, NJ 07071, 201 933 8800; usa.sika.com.

2.2 PERFORMANCE REQUIREMENTS

A. Water repellents must meet the following performance requirements as determined by manufacturer's standard substrates representing those indicated for this Project.

B. Water Absorption: Minimum 90 percent reduction of water absorption after 24 hours for treated compared to untreated specimens when tested in accordance with the following:

1. Cast-in-Place Concrete: ASTM C642.

C. Water-Vapor Transmission: Comply with one or both of the following:

1. Minimum 80 percent water-vapor transmission of treated compared to untreated specimens, in accordance with ASTM D1653.

D. Water Penetration and Leakage through Masonry: Minimum 90 percent reduction in leakage rate of treated compared to untreated specimens, in accordance with ASTM E514/E514M.

2.3 MPI-APPROVED WATER REPELLENTS

A. Water Repellent, Clear (Not Paintable); MPI #117: Penetrating, silicone-oil type, clear water-repellent for interior or exterior masonry block or brick, not intended for recoating.

1. Acceptable Products:
   a. Chemstop WB Heavy Duty Water Repellent, Euclid Chemical Company.
   b. ConFlex Siloxane Water Repellant, Sherwin-Williams.
   c. Rainguard Silane/Siloxane Water Repellent (Heavy Duty), Curecrete Distribution, Inc.

2. VOC Content: Maximum 50 g/L (EPA Method 24).

3. Performance: Shall reduce water absorption on concrete surfaces without film formation and shall remain vapor permeable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements and conditions affecting performance of the Work.

1. Verify that surfaces are clean and dry in accordance with water-repellent manufacturer's requirements. Check moisture content in three representative locations by method recommended by manufacturer.
2. Verify that there is no efflorescence or other removable residues that would be trapped beneath the application of water repellent.
3. Verify that required repairs are complete, cured, and dry before applying water repellent.

B. Test pH level in accordance with water-repellent manufacturer's written instructions to ensure chemical bond to silica-containing or siliceous minerals.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. New Construction and Repairs: Allow concrete and other cementitious materials to age before application of water repellent, in accordance with repellent manufacturer's written instructions.

B. Cleaning: Before application of water repellent, clean substrate of substances that could impair penetration or performance of product in accordance with water-repellent manufacturer's written instructions .

C. Protect adjoining work, including mortar and sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass if there is the possibility of water repellent being deposited on surfaces. Cover live vegetation.

D. Coordination with Mortar Joints: Do not apply water repellent until pointing mortar for joints adjacent to surfaces receiving water-repellent treatment has been installed and cured.

E. Coordination with Sealant Joints: Do not apply water repellent until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.

1. Water-repellent work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those required.

3.3 APPLICATION OF WATER REPELLENTS

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect the substrate before application of water repellent and to instruct Applicator on the product and application method to be used.

B. Apply a second saturation coating, repeating first application. Comply with manufacturer's written instructions for limitations on drying time between coats and after rainstorm wetting of surfaces between coats. Consult manufacturer's technical representative if written instructions are not applicable to Project conditions.

3.4 FIELD QUALITY CONTROL

A. Testing of Water-Repellent Material: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when water repellent is being applied:

1. Owner may engage the services of a qualified testing agency to sample water-repellent material being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will perform tests for compliance of water-repellent material with product requirements.
3. Owner may direct Contractor to stop applying water repellents if test results show material being used does not comply with product requirements. Contractor to remove noncomplying material from Project site, pay for testing, and correct deficiency of surfaces treated with rejected materials, as approved by Architect.

B. Coverage Test: In the presence of Architect, hose down a dry, repellent-treated surface to verify complete and uniform product application. A change in surface color will indicate incomplete application.

1. Notify Architect seven days in advance of the dates and times when surfaces will be tested.
2. Reapply water repellent until coverage test indicates complete coverage.

3.5 CLEANING

A. Immediately clean water repellent from adjoining surfaces and surfaces soiled or damaged by water-repellent application, in accordance with manufacturer's written cleaning instructions, as work progresses. Correct damage to work of other trades caused by water-repellent application, as approved by Architect.

END OF SECTION 071900

SECTION 07 21 00 - THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Extruded polystyrene foam-plastic board insulation.
2. Mineral-wool blanket insulation.
3. Spray-applied cellulosic insulation.

B. Related Requirements:

1. Section 07 14 13 "Hot Fluid-Applied Rubberized Asphalt Waterproofing" for waterproofing.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Installer's Certification: Listing type, manufacturer, and R-value of insulation installed in each element of the building thermal envelope.

1. For blown-in or sprayed fiberglass and cellulosic-fiber loose-fill insulation, indicate initial installed thickness, settled thickness, settled R-value, installed density, coverage area, and number of bags installed.
2. Sign, date, and post the certification in a conspicuous location on Project site.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Research Reports: For foam-plastic insulation, from ICC-ES.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Thermal Insulation manufactured by: Owens Corning, One Owens Corning Parkway, Toledo, OH 43659, 419 248 8000, answers@answers.owenscorning.com; www.owenscorning.com, and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed or comparable products by the following, provided products are in compliance with the performance criteria:

1. CertainTeed, 20 Moores Road, Malvern, PA 19355, 610 893 6000, www.certainteed.com.
2. Dow Inc., 2211 H.H. Dow Way, Midland, MI 48674 989 636 1000; dow.com

2.2 SOURCE LIMITATIONS

2.3 Source limitations: engage a qualified insulation manufacturer to assume undivided responsibility for production of paneling, wood-veneer-faced architectural cabinets and wood trim.

2.4 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Maximum flame-spread and smoke-developed indexes less than Class A, 25 and 450 when tested in accordance with ASTM E84.

B. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

2.5 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD INSULATION (XPS)

A. Extruded Polystyrene Board Insulation, Type VII: ASTM C578, Type VII, 60 psi (414 kPa) minimum compressive strength.

2.6 MINERAL-WOOL BLANKET INSULATION

A. Mineral-Wool Blanket Insulation, Unfaced: ASTM C665, Type I (blankets without membrane facing); consisting of fibers; complying with ASTM E136 for combustion characteristics.

2.7 SPRAY-APPLIED CELLULOSIC INSULATION

A. Self-Supported, Spray-Applied Cellulosic Insulation: ASTM C1149, Type I (materials applied with liquid adhesive; suitable for either exposed or enclosed applications chemically treated for flame-resistance, processing, and handling characteristics.

2.8 INSULATION FASTENERS

A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of specified thickness securely in position with self-locking washer in place.

1. Plate: Perforated, galvanized carbon-steel sheet, 0.030 inch (0.762 mm) thick by 2 inches (50 mm) square.
2. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch (2.67 mm) in diameter; length to suit depth of insulation.

B. Adhesively Attached, Angle-Shaped, Spindle-Type Anchors: Angle welded to projecting spindle; capable of holding insulation of specified thickness securely in position with self-locking washer in place.

1. Angle: Formed from 0.030-inch- thick, perforated, galvanized carbon-steel sheet with each leg 2 inches square.
2. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch in diameter; length to suit depth of insulation.

C. Insulation-Retaining Washers: Self-locking ped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in the following locations:

1. Ceiling plenums.

D. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates without damaging insulation, fasteners, or substrates.

E. Insulation Fastener Accessories: Provide double-pointed weld pins, lagging pins, quilting pins, duct liner pins, insulation hangers, specialty washers, special caps, j-hooks, capacitor discharge annular weld pins, capacitor discharge acoustical lagging pins, and other accessory materials that are recommended in writing by insulation fastener manufacturer to produce complete insulation supports.

2.9 ACCESSORIES

A. Insulation for Miscellaneous Voids:

1. Spray Polyurethane Foam Insulation: ASTM C1029, Type II, closed cell, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E84.

B. Miscellaneous Application Accessories:

1. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.
2. Crack Sealer: Closed-cell insulating foam in aerosol dispenser recommended in writing by insulation manufacturer for filling gaps in board insulation.

3. Curtain-Wall Insulation Clips: Z-shaped galvanized steel as recommended in writing by insulation manufacturer.
4. Detailing Foam Insulation for Voids: Urethane foam complying with AAMA 812, low expansion pressure suitable for filling insulation gaps and voids adjacent to openings to protect against water, air, and sound intrusion.
5. Tapes for Reflective Insulation and Barriers:

    a. Aluminum-foil tape for repairs or splicing material.
    b. Double-sided tape for adhering to metal framing or overlapping material.
    c. Reinforced-foil tape for sealing tears or cuts in sheet vapor barrier.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or those that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products, applications and applicable codes.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Install insulation with manufacturer's R-value label exposed after insulation is installed.

D. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

E. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

3.3 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

A. Blanket Insulation: Install in cavities formed by framing members in accordance with the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.

2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. Maintain 3-inch (76-mm) clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
4. For metal-framed wall cavities where cavity heights exceed 96 inches (2438 mm), support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
   a. Interior Walls: Set units with facing placed toward areas of high humi**dity**.

B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft..
2. Detailing Foam Insulation for Voids: Apply in accordance with manufacturer's written instructions.

C. Spray-Applied Cellulosic Insulation: Apply spray-applied insulation in accordance with manufacturer's written instructions.

1. Do not apply insulation until installation of pipes, ducts, conduits, wiring, and electrical outlets in walls is completed and windows, electrical boxes, and other items not indicated to receive insulation are masked.
2. After insulation is applied, make flush with face of studs by using method recommended by insulation manufacturer.

3.4 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.

B. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 07 42 13 - Metal Composite Material Wall Panels

PART 1 - General

1.1 SUMMARY

A. Section Includes:

1. Metal Composite Material (MCM) panels.

B. Related Requirements:

1. Section 08 80 00 “Glazing” for Insulated Sandwich Panels to be glazed intro aluminum framing.
2. Section 08 43 13 “Glazed Aluminum Curtain Walls." for adjacent building systems.

1.2 DEFINITIONS

A. MCM: Metal composite material; cladding material formed by joining two thin metal skins to polyethylene or fire-retardant core and bonded under precise temperature, pressure, and tension.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, MCM system Installer, MCM system manufacturer's representative, and installers whose work interfaces with or affects MCM panels, including installers of curtainwalls.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to MCM system installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affect MCM system.
6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
7. Review temporary protection requirements for system assembly during and after installation.
8. Review procedures for repair of panels damaged after installation.
9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.4 ACTION SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel, system, and accessory.

1. Metal composite material (MCM) panels.

B. Shop Drawings:

1. Include fabrication and installation layouts of MCM system; details of edge conditions, joints, panel profiles, corners, anchorages, attachment assembly, trim, flashings, closures, accessories, and special details.
2. Accessories: Include details of flashing, trim, and anchorage, at a scale of not less than 1-1/2 inches per 12 inches (1:10).

C. Samples for Verification: For each type of MCM panel required, with factory-applied color finishes.

1. MCM Panel: Three samples, 4 by 6 inches (100 by 150 mm) Manufacturers' standard size.

1.5 INFORMATIONAL SUBMITTALS

A. Test and Evaluation Reports:

1. Product Test Reports: For each MCM panel, for tests performed by manufacturer and witnessed by a qualified testing agency.

a. MCM Panel Manufacturer's Material Test Reports
b. Fabricator's MCM System Test Reports: Certified test reports showing system compliance with specific performance or third-party listing documenting compliance in accordance with the IBC and Tested to AAMA 501.1.

B. Qualification Statements: For fabricator Installer.

C. Sample warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For MCM panels.

B. Warranty Documentation:

1. Manufacturers' special warranties.
2. Installer's special warranties.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 5 years' experience.

B. Fabricator Qualifications: Approved by MCM panel manufacturer.

C. Installer Qualifications: Fabricator of MCM panels.

D. Testing Agency Qualifications: An agency acceptable to authorities having jurisdiction.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, MCM panels, and other manufactured items so as not to be damaged or deformed. Package MCM panels for protection during transportation and handling.

B. Unload, store, and erect MCM panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack MCM panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store MCM panels to ensure dryness, with positive slope for drainage of water. Do not store MCM panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on MCM panels during installation.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of MCM panels to be performed in accordance with manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

A. Coordinate MCM panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

A. Panel Integrity Warranty: Manufacturer agrees to repair or replace components of MCM panels that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including rupturing, cracking, or puncturing.
b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty Period: 10 years from date of Substantial Completion.

B. Panel Finish Warranty: Manufacturer agrees to repair finish or replace MCM panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested in accordance with ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

C. MCM System Warranty: System manufacturer's standard form in which manufacturer agrees to repair or replace components of MCM systems 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 MANUFACTURERS

A. Basis of Design: Alucobond Plus Face-Fastened Panels manufactured by Alucobond, 721 Jetton Street, Suite 325, Davidson, NC 28036 800 626 3365, info.usa@3AComposites.com; www.alucobondusa.com and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed or comparable products manufactured by the following, provided products are in compliance with the performance criteria:

1. Arconic Corporation, 201 Isabella Street, Suite 400, Pittsburgh, PA 15212, USA., 412 992 2500; arconic.com.
2. Mitsubishi Chemical Composites America, 9115 Harris Corners Parkway, Suite 300, Charlotte, NC 28269, 212 672 9400, Info.3dp.ppd@m-chem.com; us.mitsubishi-chemical.com.

2.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: MCM systems to withstand the effects of the following loads, based on testing in accordance with ASTM E330/E330M:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.
3. Deflection Limits: For wind loads, no greater than 1/240 of the span.

B. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) when tested in accordance with ASTM E283/E283M at the following test-pressure difference:

1. Test-Pressure Difference: 1.57 lbf/sq. ft. (75 Pa).

C. Water Penetration under Static Pressure: No water penetration when tested in accordance with ASTM E331 at the following test-pressure difference:

1. Test-Pressure Difference: 2.86 lbf/sq. ft. (137 Pa).

D. Water Penetration under Dynamic Pressure: No water penetration when tested in accordance with AAMA 501.1 at the following test pressure:

1. Test Pressure: 6.24 psf (300 Pa).

E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

F. Fire-Resistance Ratings: Comply with ASTM E119 or UL 263; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

G. Fire Propagation Characteristics: MCM system passes NFPA 285 testing.

2.3 METAL COMPOSITE MATERIAL (MCM) WALL PANELS

A. Metal Composite Material (MCM) Wall Panels: Provide MCM panels fabricated from two metal facings bonded to a solid, extruded thermoplastic core.

1. Core: Fire retardant.
2. Panel Thickness: 0.157- inch (4 mm).
3. Bond Strength: 22.5 in-lb/in. (100 N x mm/mm) when tested for bond integrity in accordance with ASTM D1781.
4. Fire Performance: Flame-spread index less than 25 and smoke-developed index less than 450, in accordance with ASTM E84 or UL 723.

B. MCM Panel Materials:

1. Aluminum-Faced Panels: ASTM B209/B209M alloy as standard with manufacturer, temper as required to suit finish and forming operations 3003, H14 with 0.020-inch-(0.50-mm-) thick, aluminum sheet facings.

a. Panel Thickness: 4mm (0.157”)
b. Core: Fire retardant
c. Exterior Finish: Two-coat fluoropolymer.

1) Color: As indicated on drawings.

2. Peel Strength: 22.5 in-lb/in. (100 N x mm/mm) when tested for bond integrity in accordance with ASTM D1781.
3. Fire Performance: Flame spread less than 25 and smoke developed less than 450, in accordance with ASTM E84.

C. Attachment Assembly Components.

1. Basis-of-design Product:

a. Joint-Rail:

1) Extruded aluminum 6063-T6 material.
2) Finish: AAMA 611 Black Anodized Class 1.
3) Width: 4.25”.
4) Length: 8’.

b. Start-Mid-End Rail:

1) Extruded aluminum 6063-T6 material.
2) Finish: AAMA 611 Black Anodized Class 1.
3) Width: 3.19”.
4) Length: 8’.

c. Screw:

1) Type 304 stainless steel material.
2) Finish: To match the metal panel unless otherwise specified.
3) Head Width: 0.472”
4) Length: 0.825”

2.4 ACCESSORIES

A. Metal Sub Framing and Furring: ASTM C955 cold-formed, metallic-coated steel sheet ASTM A653/A653M, G90 (Z275) hot-dip galvanized coating designation or ASTM A792/A792M, Class AZ50 (Class AZM150) aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of MCM system.

B. System Accessories: Provide components required for a complete, weathertight wall system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of MCM panels unless otherwise indicated.

C. Flashing and Trim: Provide flashing and trim formed from same material as MCM panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae,

soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent MCM panels.

D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Use gasketed or approved coated fasteners between dissimilar metals.

1. Aluminum Panels: Use aluminum or stainless-steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized-steel fasteners for surfaces exposed to the interior.
2. Provide exposed fasteners with heads matching color of MCM panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.

E. Panel Sealants: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in MCM panels and remain weathertight; and as recommended in writing by MCM system manufacturer.

2.5 FABRICATION

A. Fabricate and finish MCM panels at the factory, by panel manufacturer's standard procedures and processes, as necessary to fulfill indicated panel performance requirements demonstrated by laboratory testing.

B. Shop-fabricate MCM systems and accessories by fabricator's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with requirements of MCM panel manufacturer, of indicated system profiles, and with dimensional and structural requirements.

1. Fabricate panels to dimensions indicated on Drawings based on an assumed design temperature of 70 deg F (21 deg C). Allow for ambient temperature range at time of fabrication.
2. Formed MCM panel lines, breaks, and angles to be sharp and straight, with surfaces free from warp or buckle.
3. Fabricate panels with sharply cut edges and no displacement of face sheet or protrusion of core.
4. Fabricated Panel Tolerances: Shop-fabricate panels to sizes and joint configurations indicated on Drawings.

    a. Width: Plus or minus 0.079 inch (2 mm) at 70 deg F (21 deg C).
    b. Length: Plus or minus 0.079 inch (2 mm) at 70 deg F (21 deg C).
    c. Squareness: Plus or minus 0.079 inch (2 mm) at 70 deg F (21 deg C).

5. Fabricate MCM panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
6. Attach routed-and-returned panel flanges to perimeter extrusions as indicated n drawings with manufacturer's standard.

C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's written instructions and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams.
4. Sealed Joints: Form non-expansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal manufacturer.

    a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal manufacturer for application, but not less than thickness of metal being secured.

2.6 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Coil-Coated Metal Finish:

1. PVDF Fluoropolymer: AAMA 2605, two-coat, with suspended mica flakes, fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

    a. Series: Tera

        1) Color: #384 Terracotta manufactured by Alucobond

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, MCM system supports, and other conditions affecting performance of the Work.

1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by MCM system manufacturer.
2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by MCM system manufacturer.

    a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and assemblies penetrating MCM system to verify actual locations of penetrations relative to seam locations of MCM panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF MCM PANELS

A. General: Install MCM system in accordance with system manufacturer's written instructions in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to supports unless otherwise indicated. Anchor MCM system securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving MCM system.
2. Flash and seal MCM system at perimeter of all openings. Fasten with self-tapping screws.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as MCM system work proceeds.
6. Align bottoms of MCM panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
7. Provide weathertight escutcheons for all items penetrating system.
8. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by MCM system manufacturer.
9. Attach MCM panels to supports at locations, spacings, and with fasteners recommended by manufacturer to meet listed performance requirements.

B. Attachment Assembly, General: Install attachment assembly required to support MCM panels and to provide a complete weathertight wall system, including tracks, drainage channels, anchor channels, perimeter extrusions.

1. Install sub-framing, furring, and other panel support members and anchorages in accordance with ASTM C955.
2. Install support system at locations, at spacings, and with fasteners recommended by MCM system manufacturer to meet listed performance requirements.

C. Install panels to allow individual panels to "free float" and be installed and removed without disturbing adjacent panels.

D. Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install accessory components required for a complete MCM system assembly including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by MCM system manufacturer.

E. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.

1. Install exposed flashing and trim that is without buckling and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install trim to fit substrates and to result in waterproof performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 ft. (3 m) with no joints allowed within 24 inches (605 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

3.3 INSTALLATION TOLERANCES

A. Shim and align MCM panels within installed tolerance of 1/4 inch in 20 ft. (6 mm in 6 m), non-accumulative, on level, plumb, and location lines as indicated, and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Water-Spray Test: After installation, test area of assembly indicated on Drawings for water penetration in accordance with AAMA 501.2.

C. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed MCM system installation, including accessories.

D. MCM system will be considered defective if it does not pass test and inspections.

E. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.

F. Prepare test and inspection reports.

3.5 CLEANING

A. Remove temporary protective coverings and strippable films as MCM panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of installation, clean finished surfaces as recommended by MCM panel manufacturer. Maintain in a clean condition during construction.

B. After installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

3.6 PROTECTION

A. Replace MCM panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 42 13

SECTION 07 42 93 - SOFFIT PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal soffit panels.

B. Related Requirements:

1. Section 07 42 13 - “Metal Composite Material Wall Panels" for metal wall panels.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site

1.3 ACTION SUBMITTALS

A. Product Data:

1. Metal soffit panels.

B. Product Data Submittals:

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

C. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

D. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.

1. Include similar trim samples and accessories involving color selection.

E. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

1. Metal Panels: 12 inches long by actual panel width. Include fasteners, closures, and other metal panel accessories.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each product, tests performed by a qualified testing agency.

C. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

B. Warranty Documentation:

1. Manufacturers' special warranties.
2. Installer's special warranties.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

1.8 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.9 COORDINATION

A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including rupturing, cracking, or puncturing.
b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Metafor Soffit Panels manufactured by ATAS International, Inc., 6612 Snowdrift Road, Allentown, PA 18106, info@atas.com, 800 468 1441; atas.com., and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed for comparable products manufactured by the following, provided products are in compliance with the performance criteria:

1. Petersen Aluminum Corporation (PAC-CLAD) 1005 Tonne Road, Elk Grove Village, IL 60007, 800 722 2523, info@pac-clad.com.
2. Englert, Inc., 1200 Amboy Avenue, Perth Amboy, NJ 08861, info@englertinc.com; englertinc.com, 732 826 8614.
3. Or other comparable Manufacturer’s products.

2.2 METAL SOFFIT PANELS

A. Provide metal soffit panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners Mn side laps. Include accessories required for weathertight installation.

B. Flush-Profile Metal Soffit Panels: Perforated panels with vertical panel edges and intermediate stiffening ribs symmetrically spaced between panel edges; with flush joint between panels.

1. Aluminum Sheet: Coil-coated sheet, ASTM formed B209 (ASTM B209M), alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.

    a. Thickness: 0.032 inch (0.81 mm).
    b. Surface: Flat Finish.
    c. Exterior Finish: Two-coat fluoropolymer.
    d. Color: As indicated on drawings.

2. Panel Coverage: As indicated on drawings .
3. Panel Height: As indicated on drawings .

C. Metal Soffit Panel Types:

1. MSP-401: solid metal soffit panels with 1-1/2- inch x 5/8 - inch flutes

2. MSP-402: perforated metal soffit panels with 1-1/2 - inch x 5/8- inch flutes

    a. Hole size and shape: ¼-inch round
    b. Percentage of the open area: 10 percent

3. MSP-403: match existing metal soffit panels.

2.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide MCM panel systems capable of withstanding the effects of the following loads, based on testing in accordance with ASTM E330:

1. Wind Loads: As indicated on Drawings.
2. Panel Deflection Limit: For wind loads, no greater than 1/60of the span.
3. Framing Member Deflection Limits: For wind loads, no greater than 1/175 of the span.

B. Thermal Movements: Locate expansion and contraction points to allow for free and noiseless thermal movements from surface temperature changes at a range of 20 deg F to 180 deg F (minus 29 to 82.2 deg C), material surfaces

2.4 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C645, cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 (Z275) hot-dip galvanized coating designation or ASTM A792/A792M, Class AZ50 (Class AZM150) aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, panel system including trim, clips, flashings, sealants, gaskets, fillers and similar items. Match material and finish of metal panels unless otherwise indicated.

C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Finish flashing and trim with same finish system as adjacent metal panels.

D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.

E. Panel Sealants: Provide sealant types recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, non-sag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.5 FABRICATION

A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
4. Sealed Joints: Form non-expansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

    a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal soffit panel manufacturer for application but not less than thickness of metal being secured.

2.6 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Aluminum Panels and Accessories:

1. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

1. Examine framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal panel manufacturer.

2. Examine sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal panel manufacturer.

    a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Supports: Install sub-framing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

1. Soffit Framing: Wire tie or clip furring channels to supports, as required to comply with requirements for assemblies indicated.

3.3 INSTALLATION OF METAL SOFFIT PANELS

A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws..
3. Install screw fasteners in predrilled holes.
4. Locate and space fasteners in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Aluminum Panels: Use aluminum or stainless-steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized-steel fasteners for surfaces exposed to the interior.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

D. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.

1. Apply panels and associated items true to line for neat and weathertight enclosure.
2. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.
3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
4. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.

E. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

F. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.

1. Install exposed flashing and trim that is without buckling, and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to achieve waterproof performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.4 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074293

SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Custom flashing and trim fabrications, made from the following:

1. Sheet metal materials.
2. Underlayment.
3. Miscellaneous materials.

B. Related Requirements:

1. Section 06 10 00 "Rough Carpentry" for wood nailers, and blocking.
2. Section 04 01 20 "Brick Masonry Repair" for materials and installation of manufactured sheet metal through-wall flashing and trim integral with masonry.
3. section 07 42 13_" Metal Composite Material Wall Panels" For Sheet Metal Flashing And Trim Integral With Metal Composite Material Wall Panels.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review requirements for insurance and certificates if applicable.
3. Review sheet metal flashing observation and repair procedures after flashing installation.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For sheet metal flashing and trim.

1. Plans, elevations, sections, and attachment details.
2. Fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work.
3. Identification of material, thickness, weight, and finish for each item and location in Project.
4. Details for forming, including profiles, shapes, seams, and dimensions.
5. Details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Details of termination points and assemblies.

7. Details of edge conditions, including eaves, ridges, valleys, rakes, crickets, flashings, and counter-flashings.
8. Details of special conditions.
9. Details of connections to adjoining work.
10. Formed flashing and trim at scale of not less than 1-1/2 inches per 12 inches (1:10).

1.4 INFORMATIONAL SUBMITTALS

A. Certificates: For each type of coping and roof edge flashing that is ANSI/SPRI/FM 4435/ES-1 tested

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Research Reports: For copings and roof edge flashing, from an agency acceptable to authority having jurisdiction showing compliance with ANSI/SPRI/FM 4435/ES-1.

D. Qualification Statements: For fabricator.

E. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing and trim, and its accessories.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: Entity that employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
2. Protect stored sheet metal flashing and trim from contact with water.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.8 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.9 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, are to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim are not to rattle, leak, or loosen, and are to remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual: Architectural Metal Flashing, Condensation and Air Leakage Control, and Reroofing" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. Sheet Metal Standard for Copper: Comply with CDA's "Copper in Architecture Design Handbook." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces

2.2 SHEET METAL MATERIALS

A. Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with minimum ASTM A653/A653M, G90 (Z275) coating designation, or aluminum-zinc alloy-coated steel sheet complying with minimum ASTM A792/A792M, Class AZ50 (Class AZM150) coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

1. Surface: Smooth, flat.

2. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

3. Color: As selected by Architect from manufacturer's full range

a. Color varies depending on the building.

4. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil (0.013 mm).

C. Aluminum Sheet: Coil-coated sheet, ASTM B209/B209M, alloy as standard with manufacturer for finish required with temper as required to suit forming operations and performance required.

1. Thickness: 0.032 inch (0.81 mm).

2. Surface: Smooth, flat.

3. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

4. Color: As selected by Architect from manufacturer's full range.

a. Match Existing.

5. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum dry film thickness of 0.5 mil (0.013 mm).

6. Clear Anodic Finish, Coil Coated: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker; Match Existing.

7. Anodized Aluminum Finish: Color in accordance with AAMA 611, MIL-A-8625, Type II, Class 2.

   a. Color: As selected by Architect from full range of industry colors and color densities.

      1) Match Existing

   b. Color Range: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Stainless Steel Sheet: ASTM A240/A240M, Type 304, dead soft, fully annealed with smooth, flat surface.

1. Shop fabricate interior and exterior corners.
2. Base Flashing (Counterflashing):

   a. Nominal Thickness:0.0188 inch (0.477 mm).
   b. Flashing Receivers: Stainless Steel: 0.0156 inch (0.396 mm).

2.3 UNDERLAYMENT

A. Synthetic Underlayment: Laminated or reinforced, woven polyethylene or polypropylene, synthetic roofing underlayment; bitumen free; slip resistant; suitable for high temperatures over 220 deg F (111 deg C); and complying with physical requirements of ASTM D226/D226M for Type I and Type II felts.

B. Self-Adhering, High-Temperature Sheet Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 30 mils (0.76 mm) thick, specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: Stable after testing at 240 deg F (116 deg C); ASTM D1970/D1970M.
2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F (minus 29 deg C) or lower; ASTM D1970/D1970M.

C. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. (0.16 kg/sq. m) minimum, of type required for application.

2.4 MISCELLANEOUS MATERIALS

A. Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

   a. Exposed Fasteners : Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
   b. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.
   c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.

2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
3. Fasteners for Stainless Steel Sheet: Series 300 stainless steel.

C. Solder:

1. For Stainless Steel: ASTM B32, Grade Sn96, with acid flux of type recommended by stainless steel sheet manufacturer.

D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.

E. Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with factory-mitered corners and junctions and with interlocking counterflashing on exterior face, of same metal as reglet.

1. Material: Stainless steel, 0.0188 inch (0.477 mm) thick.
2. Masonry Type: Provide with offset top flange for embedment in masonry mortar joint.
3. Accessories:

   a. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where Drawings show reglet without metal counterflashing.
   b. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing's lower edge.

4. Finish: 2B Mill.

2.5 FABRICATION, GENERAL

A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.

1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.
4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances:

1. Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 ft. (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.
2. Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.

G. Seams:

1. Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
2. Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use.
3. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer.

H. Do not use graphite pencils to mark metal surfaces.

2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Hanging Gutters:

1. Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required.
2. Fabricate in minimum 96-inch- (2400-mm-) long sections.
3. Furnish flat-stock gutter brackets and flat-stock gutter spacers and straps fabricated from same metal as gutters Fabricate expansion joints, expansion-joint covers, and gutter accessories from same metal as gutters.
4. Size: recommended by cited sheet metal standard, but with thickness not less than twice the gutter thickness.
5. Fabricate gutter accessories from same metal as gutters.
6. Gutter Profile: Style K in accordance with cited sheet metal standard.
7. Expansion Joints: Lap type.
8. Accessories: Continuous, removable leaf screen with sheet metal frame and hardware cloth screen Wire-ball downspout strainer.
9. Fabricate Gutters from the following materials:
10. Guards:

    a. Material: Aluminum with stainless steel mesh screen.
    b. Thickness: 0.032 inch.
    c. Width: as required for gutters.
    d. Hole/Mesh Size: Small holes, approximately 0.157 inches (4 mm) in diameter.
    e. Compatibility: Compatible with standard K-style gutters.
    f. Performance:

        1) Water Flow: Engineered to handle heavy rainfall and ensure smooth water flow, preventing overflow and blockages.

11. Debris Prevention: Effective in preventing various types of debris and pests from entering and clogging the gutter system

    a. Aluminum: 0.032 inch (0.81 mm) thick.

B. Downspouts: Fabricate rectangular downspouts to dimensions indicated on Drawings, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop fabricate elbows.

1. Fabricated Hanger Style: Fig. 1-35A in accordance with SMACNA's "Architectural Sheet Metal Manual."
2. Fabricate from the following materials:

    a. Aluminum: 0.024 inch (0.61 mm) thick.

3. Join sections with 1-1/2-inch (38-mm) telescoping joints.

4. Provide hangers with fasteners designed to hold downspouts securely to walls.
5. Locate hangers at top and bottom and at approximately 60 inches (1500 mm) o.c.
6. Connect downspouts to underground drainage system.

2.7 WALL SHEET METAL FABRICATIONS

A. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch- (2400-mm-) long, but not exceeding 12 ft. (3.6 m) long, sections, under copings, and at shelf angles. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches (150 mm) beyond each side of wall openings; and form with 2-inch- (50-mm-) high, end dams. Fabricate from the following materials:

1. Stainless Steel: 0.0156 inch (0.396 mm) thick.

B. Opening Flashings in Frame Construction: Fabricate head, sill, jamb, and similar flashings to extend 4 inches (100 mm) beyond wall openings. Form head and sill flashing with 2-inch- (50-mm-) high, end dams. Fabricate from the following materials:

1. Aluminum: 0.032 inch (0.81 mm) thick.
2. Stainless Steel: 0.0156 inch (0.396 mm) thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrates, and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
3. Verify that air- or water-resistant barriers have been installed over substrate to prevent air infiltration or water penetration.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF UNDERLAYMENT

A. Synthetic Underlayment: Install synthetic underlayment, wrinkle free, in accordance with manufacturers' written instructions, and using adhesive where possible to minimize use of mechanical fasteners under sheet metal.

1. Lap horizontal joints not less than 4 inches (100 mm).
2. Lap end joints not less than 12 inches (300 mm).

B. Self-Adhering, High-Temperature Sheet Underlayment:

1. Install self-adhering, high-temperature sheet underlayment; wrinkle free.
2. Prime substrate if recommended by underlayment manufacturer.
3. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures.
4. Apply in shingle fashion to shed water, with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses.
5. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps and edges with roller.
6. Roll laps and edges with roller.
7. Cover underlayment within 14 days.

C. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim.

1. Install in shingle fashion to shed water.
2. Lap joints not less than 2 inches (50 mm).

D. Install slip sheet, wrinkle free, over underlayment before installing sheet metal flashing and trim.

1. Install in shingle fashion to shed water.
2. Lapp joints not less than 4 inches (100 mm).

3.3 INSTALLATION OF SHEET METAL FLASHING AND TRIM, GENERAL

A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.

1. Install fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder and sealant.
3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
5. Install continuous cleats with fasteners spaced not more than 12 inches (300 mm) o.c.
6. Space individual cleats not more than 12 inches (300 mm) apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
7. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
8. Do not field cut sheet metal flashing and trim by torch.
9. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals co.ntact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion

by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Coat concealed side of uncoated-aluminum and stainless steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.

1. Space movement joints at maximum of 10 ft. (3 m) with no joints within 24 inches (600 mm) of corner or intersection.
2. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.
3. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.

E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction.

1. Use sealant-filled joints unless otherwise indicated.

a. Embed hooked flanges of joint members not less than 1 inch (25 mm) into sealant.
b. Form joints to completely conceal sealant.
c. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way.
d. Adjust setting proportionately for installation at higher ambient temperatures.

1) Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).

2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter.

1. Pretin edges of sheets with solder to width of 1-1/2 inches (38 mm); however, reduce pretinning where pretinned surface would show in completed Work.
2. Do not solder metallic-coated steel and aluminum sheet.
3. Do not pretin zinc-tin alloy-coated copper.
4. Do not use torches for soldering.
5. Heat surfaces to receive solder and flow solder into joint.

a. Fill joint completely.

b. Completely remove flux and spatter from exposed surfaces.

6. Stainless Steel Soldering:

a. Tin edges of uncoated sheets, using solder for stainless steel and acid flux.
b. Promptly remove acid-flux residue from metal after tinning and soldering.
c. Comply with solder manufacturer's recommended methods for cleaning and neutralization.

7. Copper Soldering: Tin edges of uncoated sheets, using solder for copper.
8. Copper-Clad Stainless-Steel Soldering: Tin edges of uncoated sheets, using solder for copper-clad stainless steel.

H. Rivets: Rivet joints where necessary for strength.

3.4 INSTALLATION OF SLOPED ROOF SHEET METAL FABRICATIONS

A. Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard.

1. Provide concealed fasteners where possible, and set units true to line, levels, and slopes.
2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Roof Edge Flashing:

1. Install roof edge flashings in accordance with ANSI/SPRI/FM 4435/ES-1.
2. Anchor to resist uplift and outward forces in accordance with recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at staggered 3-inch centers.
3. Anchor to resist uplift and outward forces in accordance with recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for FM Approvals' listing for required windstorm classification.

C. Copings:

1. Install copings in accordance with ANSI/SPRI/FM 4435/ES-1.
2. Anchor to resist uplift and outward forces in accordance with recommendations in cited sheet metal standard unless otherwise indicated.

a. Interlock exterior bottom edge of coping with continuous cleat anchored to substrate at 16-inch centers.
b. Anchor interior leg of coping with washers and screw fasteners through slotted holes at 24-inch centers.

3. Anchor to resist uplift and outward forces in accordance with recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for specified FM Approvals' listing for required windstorm classification.

D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless steel draw band and tighten.

E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing.

1. Insert counterflashing in reglets or receivers and fit tightly to base flashing.
2. Extend counterflashing 4 inches over base flashing.
3. Lap counterflashing joints minimum of 4 inches.
4. Secure in waterproof manner by means of snap-in installation and sealant or lead wedges and sealant unless otherwise indicated.

F. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with butyl sealant and clamp flashing to pipes that penetrate roof.

G. Hanging Gutters:

1. Join sections with joints sealed with sealant.
2. Provide for thermal expansion.
3. Attach gutters at eave or fascia to firmly anchor them in position.
4. Provide end closures and seal watertight with sealant.
5. Slope to downspouts.
6. Fasten gutter spacers to front and back of gutter.
7. Anchor back of gutter that extends onto roof deck with cleats spaced not more than 24 inches (600 mm) apart.
8. Anchor gutter with spikes and ferrules spaced not more than 24 inches (600 mm) apart.
9. Install gutter with expansion joints at locations indicated on Drawings, but not exceeding, 50 ft. (15.2 m) apart. Install expansion-joint caps.
10. Install continuous gutter screens on gutters with noncorrosive fasteners, hinged to swing open for cleaning gutters.

    a. Guards:

        1) Snap-in or lock-in style with pre-drilled holes for securement using self-tapping screws into the front of the gutter or fascia board

H. Downspouts:

1. Join sections with 1-1/2-inch (38-mm) telescoping joints.
2. Provide hangers with fasteners designed to hold downspouts securely to walls.
3. Locate hangers at top and bottom and at approximately 60 inches (1500 mm) o.c.
4. Connect downspouts to underground drainage system.

I. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated on Drawings. Lap joints minimum of 4 inches (100 mm) in direction of water flow.

3.5 INSTALLATION OF WALL SHEET METAL FABRICATIONS

A. Install sheet metal wall flashing to intercept and exclude penetrating moisture in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Opening Flashings in Frame Construction: Install continuous head, sill, jamb, and similar flashings to extend 4 inches (100 mm) beyond wall openings.

3.6 INSTALLATION TOLERANCES

A. Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 ft. (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.7 CLEANING

A. Clean and neutralize flux materials. Clean off excess solder.

B. Clean off excess sealants.

3.8 PROTECTION

A. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect.

END OF SECTION 076200

SECTION 077273 - VEGETATED ROOF SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Tray-type vegetated roof assembly.

B. Related Requirements:

1. Section 071413 "Hot-Fluid Applied Rubberized Asphalt Waterproofing" for roofing waterproofing.
2. Section 323300 "Site Furnishings" for exterior planter system.

1.2 DEFINITIONS

A. Captured Water: Water that is retained in the drainage layer of a vegetated roof assembly after new water additions have ceased and that cannot escape the roof except through evaporation or plant transpiration.

B. Finish Elevation: Elevation of finished growing-media surface of planting area.

C. Growing Medium: Manufactured, lightweight soil mixture that promotes good growing conditions for specific varieties of plants.

D. Planting Area: Areas to be planted.

E. Plant; Plants; Plant Material: Vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site

1.4 ACTION SUBMITTALS

A. Product Data: For each vegetated roof assembly.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include material descriptions for each growing medium.

B. Shop Drawings: For each vegetated roof assembly.

1. Include plans, sections, slopes, and drain locations.
2. Indicate dimensions, weights, and loads.
3. Detail field assembly of components, depth of growing media, and attachments to other work.
4. Indicate unit pavers and coordination with lighting
5. Refer to 323300 “Site Furnishing” for additional system requirements

C. Samples for Verification: For each of the following components of vegetated roof assembly:

1. Pre grown Sedum Tray: 24 by 24 inches.
2. Growing Media: 1-pint volume of each growing medium, in sealed plastic bags labeled with content and source. Each Sample to be typical of the lots of growing media to be furnished. Provide an accurate representation of texture and composition.
3. Drainage Mat: 12 by 12 inches.
4. Refer to 323300 “Site Furnishing” for additional planter system requirements

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer**.**

B. Product Certificates: For each type of manufactured product.

1. Manufacturer's certified analysis of standard products.
2. Analysis of other materials by a recognized laboratory, in accordance with methods established by the Association of Official Analytical Chemists, where applicable.

C. Product Test Reports: For complete analysis of each growing medium, for tests performed by manufacturer and witnessed by a qualified testing agency or by a qualified testing agency.

D. Field Quality-Control Reports.

E. Sample Warranty: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For vegetated roof assembly and plants, including a recommended maintenance plan with procedures for inspection and care during a calendar year. Submit before start of required warranty and maintenance periods.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A qualified vegetated roof assembly Installer whose work has resulted in successful establishment of vegetated roofs.

1. Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when vegetated roof assembly work is in progress.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and Federal laws if applicable.

B. Bulk Materials:

1. Do not dump or store bulk materials on or near structures, utilities, walkways and pavements, or existing roof areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of debris-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with product certificates.

C. Handle and store materials, and place equipment in a manner to avoid overloading roof structure or damaging roofing membrane.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when optimum results may be obtained. Apply products during favorable weather conditions in accordance with manufacturer's written instructions and warranty requirements.

1.10 WARRANTY

A. Special Warranty for Vegetated Roof Assembly: Installer agrees to repair or replace components of vegetated roof assembly that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, ponding water or prolonged wetness of growing medium caused as a result of failure of the assembly to properly drain.
2. Warranty Period: Five years from date of Planting Completion.

B. Special Warranty for Plant Growth: Refer to 329300 “Plants” for warranty requirements.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain growing medium from single source from single manufacturer.

2.2 VEGETATED ROOF ASSEMBLIES

A. Tray-Type Vegetated Roof Assembly : Modular assembly consisting of manufacturer's standard preplanted trays for field assembly adjacent to and interlocking with each other over roofing system.

1. Tray Depth, Nominal: 4 inches
2. Tray Size: 24 by 24 inches
3. Assembly Weight: Maximum 28 lb/sq. ft., including growing medium and plants except for trees and saturated with captured water, but not including weight of roofing system.
4. Plantings: Refer to 329300 “Plants” for planting requirements

2.3 VEGETATED ROOF ASSEMBLY COMPONENTS

A. Drainage Mat: drainage mat formed from impermeable dimpled polystyrene drainage core. The core is perforated, bonded to a root-resistant non-woven polypropylene filter fabric on the top side and nonwoven polypropylene membrane protection fabric on the bottom side.

1. CBR Puncture (ASTM D-6241): 250 lbs
2. Thickness (ASTM D-1777): 1”
3. Compression Resistance (ASTM D6364 /ASTMD1621): 9,500 psf
4. Opening Size (ASTM D-4751): 70 US Sieve
5. Water Flow Capacity (ASTM D-4716, Hydraulic Gradient=1)

    a. Core: 30 gal/min/ft
    b. Fabric: 250 gal/min/ft
    c. Water Retention: 1.1 gal/10sf

2.4 MANUFACTURED GROWING MEDIA

A. Lightweight Growing Medium: Manufactured soil mixture for plants indicated on Drawings and that complies with the following:

1. Particle Size (ASTM D422-63):

    a. Proportion of Particles Passing < 0.05mm: < 10 % by mass
    b. Proportion of Particles Passing <9.50mm: > 95 % by mass

2. Bulk Density Measurements (ASTM: E2399)

a. Bulk Density on Dry Weight Basis: 50.0 - 60.0 lbs/ft^3
b. Bulk Density at Max Water Holding Capacity:80.0 - 85.0 lbs/ft^3

3. Water and Air Measurements (ASTM: E2399)

a. Maximum Water Holding Capacity: > 40.0 %
b. Air Filled Porosity: > 10.0 %
c. Saturated Hydraulic Conductivity: 0.5-1.5 in/min

4. Chemical Measurements

a. pH:6.5-8.5 (ASTM 4972 v $CaCl_2$)
b. Organic Matter Level: 4.0-10.0% (ASTM F1647)
c. Soluble Salts: <1.0mmhos/cm (FLL Standards

2.5 UNIT PAVERS

A. Unit Pavers: Pavers specified in Section 321400 "Unit Paving."

2.6 ACCESSORIES

A. Planter System: Pavers specified in Section 323300 "Site Furnishings”

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine each area to receive vegetated roof assembly for compliance with requirements for installation tolerances and other conditions affecting performance.

1. Verify that roof insulation over roofing membrane is in place, secure, and flush along all seams.
2. Verify that perimeter and other flashings are in place and secure along entire lengths where they will be covered by vegetated roof assembly.

B. Inspect growing medium.

1. Verify that no foreign or deleterious material or liquid, such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in growing medium within a planting area.
2. If growing medium is contaminated by foreign or deleterious material or liquid, remove growing medium and contamination and replace with new growing medium.

3.2 PLANTING

A. Do not place growing medium or plants during frozen, wet, or muddy conditions.

B. Suspend spreading, grading, and planting operations during periods of excessive moisture until the moisture content in growing medium reaches acceptable levels to attain the required results.

C. Uniformly moisten an excessively dry growing medium that is too dusty or unworkable.

D. Pre-grown Sedum Tray: Install per manufacturer’s recommendation.

E. Site Planting: Plant vegetated roofs in accordance with requirements specified in Section 329300 "Plants" except as otherwise indicated on Drawings. Perform digging carefully to prevent damaging planter system.

F. Individual Tree Planting: Set out and space Trees in the center of each planter.

1. Dig holes large enough to allow spreading of roots.
2. Free up or remove girdling roots.
3. Work growing medium around roots to eliminate air pockets.
4. Water thoroughly after planting, taking care not to cover plant crowns with wet growing medium.
5. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.
6. See additional requirements outlined in Section 329300 “Plants”

3.3 INSTALLATION OF UNIT PAVERS

A. Installation: Install walkway pavers in accordance with requirements in Section 321400 "Unit Paving." .

3.4 INSTALLATION OF PLANTER SYSTEM

A. Refer to Section 323300 "Site Furnishings" for Planter system installation.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests.

B. Perform the following tests:

1. Flood Testing: Flood test each deck area for leaks, in accordance with procedures in ASTM D5957, after completing and protecting roofing membrane but before placing overlaying construction. Install temporary containment assemblies, plug or dam drains, and flood with potable water.

a. Flood to an average depth of 2-1/2 inches (64 mm), with a minimum depth of 1 inch (25 mm) and a maximum depth of 4 inches (100 mm). Maintain 2 inches (50 mm) of clearance from top of sheet flashings.
b. Flood each area for 24 hours.

2. Proceed with installation of vegetated roof assembly only after unsatisfactory conditions have been corrected.

C. Manufacturer's Field Service: Engage roofing-membrane manufacturer's authorized service representative to provide inspection of vegetated roof assembly installation and prepare inspection reports.

D. Correct deficiencies in work that do not comply with requirements.

E. Prepare test and inspection reports.

3.6 PROTECTION

A. Protect vegetated roof assemblies from damage, including growing-medium contamination, due to operations of other contractors and trades. Repair or replace damaged vegetated roof assemblies.

3.7 MAINTENANCE SERVICE

A. Maintenance Service: Provide maintenance by skilled employees of vegetated roof assembly Installer. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established but for not less than the specified maintenance period.

1. Assembly and Plant Maintenance: During maintenance period, maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing devices, resetting plants to proper elevations or vertical position, and performing other operations as required to establish healthy, viable plantings. Spray or treat as required to keep trees and shrubs free of insects and disease.

a. Replace growing medium that becomes displaced or eroded because of settling or other processes.
b. Apply treatments as required to keep plant materials, planted areas, and growing medium free of pests and pathogens or disease. Use integrated past management practices whenever possible to minimize the use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.
c. Use only products and methods acceptable to roofing-membrane manufacturer.

2. Maintenance Period: 12 months from date of Substantial Completion.

END OF SECTION 077273

SECTION 07 84 13 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Penetration firestopping systems.

B. Related Requirements:

1. Section 078443 "Joint Firestopping" for joints in or between fire-resistance-rated construction, at exterior curtain-wall/floor intersections, and in smoke barriers.
2. Section 079200 "Joint Sealants" for non-fire-resistance-rated joint sealants.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Product Schedule: For each penetration firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing and inspecting agency.

C. Unlisted Firestopping Systems: Obtain an Engineering Judgment (EJ) from firestopping manufacturer where no UL, FM Approvals, or other listed assembly is available for particular firestop configuration. Follow International Firestop Council (IFC) recommended guidelines for evaluating firestopping systems in EJs.

1. Engineering Judgments: Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping system, submit illustration, with modifications marked, approved by penetration firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly developed in accordance with current International Firestop Council (IFC) recommended guidelines. Obtain approval of authorities having jurisdiction prior to submittal.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Listed System Designs: For each penetration firestopping system, for tests performed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

A. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Entity that has been approved by FM Approvals in accordance with FM Approvals 4991 or been evaluated by UL Solutions and found to comply with "UL Solutions Qualified Firestop Contractor Program."

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not install penetration firestopping systems when ambient or substrate temperatures are outside limits permitted by penetration firestopping system manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.

B. Install and cure penetration firestopping system materials in accordance with manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

1.8 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping systems can be accessed and installed in accordance with specified firestopping system design.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping systems.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain penetration firestopping systems for each type of opening indicated from a single manufacturer.

2.2 PENETRATION FIRESTOPPING SYSTEMS

A. Penetration firestopping systems must be compatible with one another, with the substrates forming openings, and with penetrating items if any.

1. Penetration firestopping systems must be installed with products bearing the classification marking of a qualified testing agency.

    a. UL Solutions in its online directory "Product iQ."
    b. FM Approvals in its "Approval Guide."

2. Provide components for each penetration firestopping system that, upon curing, do not re-emulsify, dissolve, leach, break down, or otherwise deteriorate over time from exposure to atmospheric moisture, sweating pipes, ponding water, or other forms of moisture characteristic during and after construction.
3. Provide components for each penetration firestopping system that do not contain ethylene glycol.
4. Provide components for each penetration firestopping system that are sufficiently flexible to accommodate movement, such as pipe vibration, water hammer, thermal expansion, and other normal building movement without damage.
5. Provide components for each penetration firestopping system that are appropriately tested for the thickness and type of insulation utilized.

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. 3M Fire Protection Products.
2. Hilti, Inc.
3. Specified Technologies, Inc.
4. Tremco, Inc

C. Provide penetration firestopping systems that resist spread of fire, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.

D. Penetration Firestopping Systems in Fire-Resistance-Rated Walls: Systems with ratings determined in accordance with ASTM E814 or UL 1479.

1. F-Rating: Not less than the fire-resistance rating of the wall assembly penetrated.
2. Membrane Penetrations: Install recessed fixtures such that the required fire resistance will not be reduced.

E. Penetration Firestopping Systems in Horizontal Assemblies: Systems with ratings determined in accordance with ASTM E814 or UL 1479.

1. F-Rating: At least one hour, but not less than the fire-resistance rating of the floor/ceiling assembly penetrated.
2. T-Rating: At least one hour, but not less than the fire-resistance rating of the floor/ceiling assembly. The following horizontal penetrations do not require a T-rating:

a. Those within the cavity of a wall.
b. 4-inch or smaller metal conduit penetrating directly into metal-enclosed electrical switchgear.

3. W-Rating: Provide penetration firestopping systems with a Class 1 W-rating in accordance with UL 1479.

F. Penetration Firestopping Systems in Smoke Barriers: Systems with ratings determined in accordance with UL 1479.

1. L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening and no more than 50-cfm cumulative total for any 100 sq. ft. at both ambient and elevated temperatures.

G. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested in accordance with ASTM E84 or UL 723.

2.3 ACCESSORIES

A. Provide components for each penetration firestopping system that are needed to install fill materials and to maintain the required ratings. Use only those components specified by penetration firestopping system manufacturer and approved by qualified testing and inspecting agency for conditions indicated, including but not limited to:

1. Permanent forming/damming/backing materials.
2. Substrate primers.
3. Collars.
4. Steel sleeves.

2.4 FILL MATERIALS

A. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.

B. Firestopping Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.

C. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced intumescent elastomeric sheet bonded to galvanized-steel sheet.

D. Intumescent Putties: Nonhardening, water-resistant, intumescent putties containing no solvents or inorganic fibers.

E. Intumescent Wrap Strips: Single-component intumescent elastomeric strips for use around combustible penetrants.

F. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.

G. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

H. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants.

I. Thermal and Endothermic Wraps: Flexible, insulating, and fire-resistant protective wraps tested and listed for up to 2-hour fire ratings in accordance with ASTM E814 or UL 1479; for protecting membrane penetrations of utility boxes, critical electrical circuits, communications lines, and fuel lines, and for thermal barrier and circuit integrity protection in accordance with ASTM E1725 or UL 1724.

J. Fire-Rated Cable Sleeve Kits: Complete kits designed for new or existing cable penetrations through walls which accept standard accessories.

K. Fire-Rated Cable Pathways: Single or gangable device modules composed of a steel raceway with integral intumescent material and requiring no additional action in the form of plugs, twisting closure, putty, pillows, sealant, or otherwise to achieve fire and air-leakage ratings.

1. Fire-rated cable pathway devices are the preferred product for data, video, and communications cable penetrations. Install these devices in locations where frequent cable moves, add-ons, and changes will occur. Such devices must be:

    a. Capable of retrofit around existing cables.
    b. Designed so that two or more devices can be ganged together.
    c. Maintenance-free so no action is required to activate the smoke- and fire-sealing mechanism.

2. Where fire-rated cable pathway devices are not practical, openings within walls and floors designed to accommodate data, video, and communications cabling must be provided with re-enterable products specifically designed for retrofit, such as retrofit devices for cable bundles, firestopping putty, plugs, or pillows.

L. Retrofit Device for Cable Bundles: Factory-made, intumescent, collar-like device for firestopping existing over-filled cable sleeves and capable of being installed around projecting sleeves and cable bundles.

M. Wall-Opening Protective Materials: Intumescent, non-curing putty pads or self-adhesive inserts for protection of electrical switch and receptacle boxes.

N. Fire-Rated HVAC Retaining Angles: Steel angle system with integral intumescent firestopping gasket for use around rectangular steel HVAC ducts without fire dampers.

O. Firestopping Plugs: Flexible, re-enterable, intumescent, foam-rubber plug for use in blank round openings and cable sleeves.

P. Fire-Rated Cable Grommet: Molded two-piece grommet made of plenum-grade polymer and foam inner core for sealing small cable penetrations in gypsum walls up to 1/2 inch (13 mm) in diameter.

Q. Closet Flange Gasket: Molded, single-component, flexible, intumescent gasket for use beneath a water closet (toilet) flange in floor applications.

2.5 MIXING

A. Penetration Firestopping Materials: For those products requiring mixing before application, comply with penetration firestopping system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Before installing penetration firestopping systems, clean out openings in accordance with manufacturer's written instructions and with the following requirements:

1. Remove foreign materials from substrate surfaces that could interfere with adhesion of penetration firestopping materials.
2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping materials. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form-release agents from concrete.

B. Prime substrates in accordance with penetration firestopping system manufacturer's written installation instructions, using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent penetration firestopping from contacting adjoining surfaces that will remain exposed on completion of the Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove tape as soon as possible without disturbing firestopping's seal with substrates.

3.3 INSTALLATION OF PENETRATION FIRESTOPPING SYSTEMS

A. General: Install penetration firestopping systems in accordance with manufacturer's written installation instructions and published drawings for products and applications.

B. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not forming permanent components of firestopping.

C. Install fill materials by proven techniques to produce the following results:

1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items to achieve required fire-resistance ratings.
2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

A. Wall Identification: As specified in Section 078443 “Joint Firestopping”.

3.5 FIELD QUALITY CONTROL

A. Owner will engage a qualified inspection agency to conduct and report on inspections in accordance with ASTM E2174.

B. Where deficiencies are found or penetration firestopping system is damaged or removed because of testing, repair or replace penetration firestopping system to comply with requirements.

C. Proceed with enclosing penetration firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTION

A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping system manufacturers and that do not damage materials in which openings occur.

B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping systems are without damage or deterioration at time of Substantial

Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping material and install new materials to produce systems complying with specified requirements.

3.7 PENETRATION FIRESTOPPING SYSTEM SCHEDULE FORMAT

A. Penetration Firestopping System for (specific penetrating item and wall construction):

1. Testing Agency System Designation:
2. F-Rating: As indicated on Drawings.
3. T-Rating (for horizontal assemblies not within wall cavities): 1 hour.
4. W-Rating (at specified locations.)
5. Properties and size of penetrating item(s).
6. Type of Fill Materials:

B. Clearly indicate all ancillary space requirements of void.

C. Group horizontal systems (floor) and vertical systems (walls) separately.

END OF SECTION 078413

SECTION 07 84 43 - JOINT FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Joints in or between fire-resistance-rated construction.

B. Related Requirements:

1. Section 078413 "Penetration Firestopping" for penetrations in fire-resistance-rated walls, horizontal assemblies, and smoke barriers and for wall identification.
2. Section 079200 "Joint Sealants" for non-fire-resistive joint sealants.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data:

1. For each type of product.

B. Unlisted Firestopping Systems: Obtain an Engineering Judgment (EJ) from firestop manufacturer where no UL, FM Approvals, or other listed assembly is available for firestop configuration. Follow International Firestop Council (IFC) recommended guidelines for evaluating firestop systems in EJs.

C. Product Schedule: For each joint firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing agency.

1. Contractor to submit schedule formatted as indicated in Part 3 identifying joint requirements of specific conditions indicated on the drawings and in compliance with specified performance criteria.
2. Engineering Judgments: Where Project conditions require modification to a qualified testing agency's illustration for a particular joint firestopping system condition, submit illustration, with modifications marked, approved by joint firestopping system manufacturer's fire-protection engineer as an EJ or equivalent fire-resistance-rated assembly developed in accordance with current IFC guidelines.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Listed System Designs: For each joint firestopping system, for tests performed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

A. Installer Certificates: From Installer indicating that joint firestopping systems have been installed in compliance with requirements and manufacturer's written installation instructions.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A firm that has been approved by FM Approvals in accordance with FM Approvals 4991 "Approval of Firestop Contractors," or been evaluated by UL and found to comply with UL's "Qualified Firestop Contractor Program Requirements."

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install joint firestopping systems when ambient or substrate temperatures are outside limits permitted by joint firestopping system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Install and cure joint firestopping systems in accordance with manufacturer's written installation instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.

1.8 COORDINATION

A. Coordinate construction of joints to ensure that joint firestopping systems can be installed in accordance with specified firestopping system design.

B. Coordinate sizing of joints to accommodate joint firestopping systems.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain joint firestop systems for each type of joint opening indicated from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics:

1. A qualified testing agency, acceptable to authorities having jurisdiction, will perform joint firestopping system tests.
2. Test in accordance with testing standards referenced in "Joint Firestopping Systems" Article. Provide rated systems complying with the following requirements:

    a. Joint firestop systems installed with products bearing the classification marking of a qualified product certification agency in accordance with listed system designs published by a qualified testing agency.

        1) UL in its online directory "Product iQ."
        2) Intertek Group in its "Directory of Building Products."

2.3 JOINT FIRESTOPPING SYSTEM TYPES

A. General: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which joint firestopping systems are installed. Joint firestopping systems must accommodate building movements without impairing their ability to resist the passage of fire and hot gases.

1. Joint firestopping systems that are compatible with one another, with the substrates forming openings, and with penetrating items, if any.
2. Provide products that, upon curing, do not re-emulsify, dissolve, leach, break down, or otherwise deteriorate over time from exposure to atmospheric moisture, sweating pipes, ponding water or other forms of moisture.
3. Provide firestop products that do not contain ethylene glycol.

B. Manufacturers: Subject to compliance with requirements, provide all products by one of the following. Do not use products from multiple manufacturers.

1. A/D Fire Protection Systems Inc.
2. Hilti, Inc.
3. Nelson Firestop Products.
4. Specified Technologies Inc.
5. 3M Fire Protection Products.

C. Perimeter Fire-Barrier System: Provide perimeter fire-barrier system that does not require direct screw attachment to mullions and transoms to support and fasten curtain-wall insulation for aluminum curtain-wall assemblies with one- or two-piece rectangular mullions at least 2-1/2 by 5 inches (64 by 127 mm). System will be tested in accordance with ASTM E2307 for up to two-hour fire resistance and with ASTM E1233/E1233M for wind cycling equivalent to 108 mph (174 km/h) wind for 500 cycles.

D. Joints in or between Fire-Resistance-Rated Construction: Provide joint firestopping systems with ratings determined in accordance with ASTM E1966 or UL 2079, with published L-

Ratings for ambient and elevated temperatures as evidence of the ability of the fire-resistive joint system to restrict the movement of smoke.

1. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the wall, floor, or roof in or between which it is installed.

E. Joints at Exterior Curtain-Wall/Floor Intersections: Provide joint firestopping systems with rating determined in accordance with ASTM E2307.

1. F-Rating: Equal to or exceeding the fire-resistance rating of the floor assembly.

F. Exposed Joint Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined in accordance with ASTM E84.

2.4 ACCESSORIES

A. Provide components of joint firestopping systems, including primers and forming materials, that are needed to install elastomeric fill materials and to maintain ratings required. Use only components specified by joint firestopping system manufacturer and approved by the qualified testing agency for conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Before installing joint firestopping systems, clean joints in accordance with fire-resistive joint system manufacturer's written installation instructions and the following requirements:

1. Remove foreign materials from substrate surfaces that could interfere with adhesion of elastomeric fill materials or compromise fire-resistive rating.
2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with elastomeric fill materials. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form-release agents from concrete.

B. Prime substrates in accordance with joint firestopping system manufacturer's written installation instructions, using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Apply a suitable bond breaker to prevent three-sided adhesion in applications where condition occurs.

3.3 INSTALLATION

A. General: Install joint firestopping systems in accordance with manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming materials and other accessories of types required to support elastomeric fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

1. After installing elastomeric fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of fire-resistive joint system.

C. Install elastomeric fill materials for joint firestopping systems by proven techniques to produce the following results:

1. Apply elastomeric fill in voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
2. Apply elastomeric fill materials so they contact and adhere to substrates formed by joints.
3. For elastomeric fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

A. Wall Identification: Permanently label walls containing firestopping systems with the words "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS," using lettering not less than 3 inches (76 mm) high and with minimum 0.375-inch (9.5-mm) strokes.

1. Locate in accessible concealed floor, floor-ceiling, or attic space at 15 ft. (4.57 m) from end of wall and at intervals not exceeding 30 ft. (9.14 m) approximately 12 inches above ceiling.
2. At Contractor option signage may be mounted signage or painted stencils complying with the necessary criteria listed above.

3.5 FIELD QUALITY CONTROL

A. Owner will engage a qualified testing agency to perform tests and inspections in accordance with ASTM E2393.

B. Where deficiencies are found or joint firestopping systems are damaged or removed due to testing, repair or replace joint firestopping systems so they comply with requirements.

C. Proceed with enclosing joint firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTION

A. Clean off excess elastomeric fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by joint firestopping system manufacturers and that do not damage materials in which joints occur.

B. Provide final protection and maintain conditions during and after installation that ensure joint firestopping systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated joint firestopping systems immediately and install new materials to produce joint firestopping systems complying with specified requirements.

3.7 FIRE RESISTIVE JOINT SYSTEM SCHEDULE FORMAT

A. Wall to Wall (WW), Fire Resistive Joint System for (specific construction and fill material):

1. Testing Agency System Designation.
2. Wall Construction: (CMU, concrete, drywall, steel column etc. as applicable.)
3. F-Rating: Matching wall rating as indicated on Drawings.
4. Nominal Joint Width: 1/2 inch (12 mm) minimum dimension or as indicated.
5. Movement Capability: Class II minimum – 50% compression capability.
6. Note: Combined joint width and movement capability to accommodate 1/2 inch (12 mm) of deflection of floor slab above.

B. Head-of-Wall (HW), Fire-Resistive Joint Firestopping Systems:

1. Testing Agency System Designation.
2. Wall/Floor Construction: (Concrete, CMU, drywall, etc. as applicable.)
3. F-Rating: Matching wall rating as indicated on Drawings.
4. Nominal Joint Width: 1 inch (25 mm).
5. Movement Capability: Class II minimum – 50% compression capability.
6. Note: Combined joint width and movement capability to accommodate 1/2 inch (12 mm) of deflection of floor slab above.

C. Bottom-of-Wall (BW), Joint Firestopping Systems:

1. Testing Agency System Designation:

2. Wall/Floor Construction: (Concrete, CMU, drywall, etc. as applicable.)
3. F-Rating: Matching wall rating as indicated on Drawings.
4. Nominal Joint Width: 1 inch (25 mm).
5. Movement Capability: Class II minimum – 50% compression capability.
6. Note: Combined joint width and movement capability to accommodate 1/2 inch (12 mm) of deflection of floor slab below.

D. Perimeter (CW), Fire Resistive Joint System for Fire-Rated Storefront Framing:

1. Testing Agency System Designation:
2. Perimeter Joint at Wall and Floor Construction: (Cold formed framing/curtain wall, etc.)
3. F-Rating: 2 hours.
4. T-Rating: 2 hours.
5. Nominal Joint Width: As directed by rated window system manufacturer.
6. Movement Capability: Class II minimum – 25% compression capability.
7. Note: Provide mineral wool form material behind sealant firmly packed into the joint full depth of the frame.

END OF SECTION 078443

SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Urethane joint sealants.
3. Mildew-resistant joint sealants.
4. Butyl joint sealants.
5. Latex joint sealants.

B. Related Requirements:

1. Section 09 29 00 “Gypsum Board” for sealing joints in sound-rated construction.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product data: for each joint sealant product.

1. Silicone joint sealants.
2. Urethane joint sealants.
3. Mildew-resistant joint sealants.

B. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

C. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Product Test Reports: For each kind of joint sealant, for tests performed by manufacturer and witnessed by a qualified testing agency or performed by a qualified testing agency.

C. Field-Adhesion-Test Reports: For each sealant application tested.

D. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Authorized representative who is trained and approved by manufacturer.

B. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: Qualified according to ASTM C1021 to conduct the testing indicated.

1.6 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer[or are below 40 deg F (5 deg C)].
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

A. Silicone, S, NS, 100/50, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 100/50, Use NT.

2.3 URETHANE JOINT SEALANTS

A. Urethane, S, NS, 25, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Dow Corning Corporation; 795.
b. Pecora Corporation; 895.
c. Sika Corporation, Construction Products Division; SikaSil-C995.

2.4 MILDEW-RESISTANT JOINT SEALANTS

A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.

B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.

1. Products: Subject to compliance with requirements, provide one of the following:

a. BASF Building Systems; Omniplus.
b. Dow Corning Corporation; 786 Mildew Resistant.
c. GE Advanced Materials - Silicones; Sanitary SCS1700.
d. Tremco Incorporated; Tremsil 200 Sanitary.

2.5 JOINT-SEALANT BACKING

A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin) Type O (open-cell material) Type B (bicellular material with a surface skin) or any of the preceding types, 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.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.6 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.

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.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

    a. Concrete.
    b. Masonry.
    c. Brick masonry.
    d. Stone Masonry

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

    a. Metal.
    b. Ceramic Tile.
    c. Terrazzo

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or

by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants in accordance with requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile in accordance with Figure 8A in ASTM C1193 unless otherwise indicated.

a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: The Owner will engage a qualified testing agency to perform tests and inspections.

B. Tests and Inspections:

1. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

a. Extent of Testing: Test completed and cured sealant joints as follows:

1) Perform one test for each 1000 ft. of joint length thereafter or one test per each floor per elevation.

b. Test Method: Test joint sealants in accordance with Method A, Tail Procedure, in ASTM C1521.

1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

c. Inspect tested joints and report on the following:

1) Whether sealants filled joint cavities and are free of voids.
2) Whether sealant dimensions and configurations comply with specified requirements.
3) 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 kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.

d. 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 material, sealant configuration, and sealant dimensions.

e. 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.

2. Evaluation of Field-Adhesion-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.

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 079200

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior Extra-Heavy-Duty Doors and Frames .
2. Exterior Extra-Heavy-Duty Doors and Frames .

B. Related Requirements:

1. Section 087100 "Door Hardware" for door hardware for hollow-metal doors.
2. Section 08 80 00 "Glazing" for field-installed glass lites and glazing.

1.2 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings in accordance with NAAMM-HMMA 803 or ANSI/SDI A250.8.

1.3 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: Product Data Submittals: For each product.

1. Include construction details, material descriptions, core descriptions, and finishes.

B. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
7. Details of anchorages, joints, field splices, and connections.
8. Details of accessories.
9. Details of moldings, removable stops, and glazing.

C. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For door inspector.

1. Egress Door Inspector: Submit documentation of compliance with NFPA 101, Section 7.2.1.15.4.
2. Submit copy of DHI Fire and Egress Door Assembly Inspector (FDAI) certificate.

B. Field Quality-Control Reports.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer must demonstrate a minimum of five (5) years successful experience in design and manufacture of similar flood related closures. Upon request, provide supporting evidence including list of installations, descriptions, name and method of contact.

B. Minimum Qualifications: Manufacturer must demonstrate compliance and certification of a Quality Management System administered by the International Organization for Standardization (ISO). Documentation of current certification status to be provided upon request.

C. Welder Qualifications: Welders Certified in accordance with American Welding Society Procedures for applicable material used in production of specified product.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.

1. Provide additional protection to prevent damage to factory-finished units.

B. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch- high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Hollow Metal Doors and Frames manufactured by: Curries Company; an Assa Abloy Group company, 1502 12th St. NW, Mason City, IA 50401, 641 423 1334; curries@curries.com, curries.com. and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed or comparable products by the following, provided products are in compliance with the performance criteria:

1. De La Fontaine Industries, 3 Normac, Woburn, MA 01801, customerservice@delafontaine.com 800 565 9230; delafontaine.com.
2. Steelcraft; an Allegion Brand, 9017 Blue Ash Road, Cincinnati, OH 45242; steelcraft.com 877 671 7011,.

B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

2.2 INTERIOR STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Extra-Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 3; ANSI/SDI A250.4, Level A.

1. Doors:

   a. Type: As indicated in the Door and Frame Schedule on Drawings.
   b. Thickness: 1-3/4 inches (44.5 mm).
   c. Face: Uncoated steel sheet, minimum thickness of 0.042 inch (1.0 mm).
   d. Edge Construction: Model 2, Seamless.
   e. Edge Bevel: Bevel lock edge 1/8 inch in 2 inches (3.2 mm in 51 mm).
   f. Core: Manufacturer's standard kraft-paper honeycomb core paper honeycomb with vertical steel stiffener.

2. Frames:

   a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
   b. Construction: Knocked down.

3. Exposed Finish: Factory Prime.

2.3 EXTERIOR STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Extra-Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 3; ANSI/SDI A250.4, Level A.

1. Doors:

   a. Type: As indicated in the Door and Frame Schedule on Drawings.
   b. Thickness: 1-3/4 inches (44.5 mm).
   c. Face: Metallic-coated steel sheet, minimum thickness of 0.053-inch (1.3 mm), with minimum A40 (ZF120) coating.
   d. Edge Construction: Model 2, Seamless.
   e. Edge Bevel: Bevel lock edge 1/8 inch in 2 inches (3.2 mm in 51 mm).
   f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
   g. Bottom Edges: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
   h. Core:

      1) Insulated Doors: Manufacturer's standard insulation core to achieve specified R-value with Vertical steel stiffener.
      2) Remaining Doors: Manufacturer's standard kraft-paper honeycomb core.

2. Frames:

   a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), with minimum A40 (ZF120) coating.
   b. Construction: Knocked down.

3. Exposed Finish: Factory Prime

2.4 FRAME ANCHORS

A. Jamb Anchors:

1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches (610 mm) of frame height above 7 feet (2.1 m).
3. Post-installed Expansion Anchor: Minimum 3/8-inch- (9.5-mm-) diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.

B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.

C. Floor Anchors for Concrete Slabs with Underlayment: Adjustable-type anchors with extension clips, allowing not less than 2-inch (51-mm) height adjustment. Terminate bottom of frames at top of underlayment.

D. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized in accordance with ASTM A153/A153M, Class B.

2.5 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized in accordance with ASTM A153/A153M.

E. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

F. Mineral-Fiber Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics.

G. Glazing: Comply with requirements in Section 088000 "Glazing."

2.6 FABRICATION

A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
2. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

B. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping in accordance with ANSI/SDI A250.6, the Door Hardware Schedule on Drawings, and templates.

1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

C. Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with mitered hairline joints.

1. Provide stops and moldings flush with face of door, and with square stops unless otherwise indicated.
2. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames. Provide loose stops and moldings on inside of hollow-metal doors and frames.
3. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
4. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

2.7 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 PREPARATION

A. Drill and tap doors and frames to receive non-templated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.

    a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
    b. Install frames with removable stops located on secure side of opening.

2. Floor Anchors: Secure with post-installed expansion anchors.

    a. Floor anchors may be set with power-actuated fasteners instead of post installed expansion anchors if so indicated and approved on Shop Drawings.

3. Solidly pack mineral-fiber insulation inside frames.
4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.
5. In-Place Concrete or Masonry Construction: Secure frames in place with post-installed expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
6. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:

    a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
    c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.

1. Comply with ANSI/SDI A250.8.

D. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow-metal manufacturer's written instructions.

3.3 REPAIR

A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

B. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint in accordance with manufacturer's written instructions.

C. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 081113

SECTION 08 11 16 - INTERIOR ALUMINUM DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior aluminum vestibule doors and frames.
2. Removable Mullions.

B. Related Requirements:

1. Section 08 41 16 "Aluminum-Framed Entrances and Storefronts " for exterior aluminum framing and entrance doors.
2. Section 08 44 13 “Glazed Aluminum Curtain Walls” for exterior fenestration.
3. Section 08 71 00 “Door Hardware” for hardware items not installed under this Section.
4. Section 08 80 00 "Glazing" for field-installed glass and glazing.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data:

1. For each type of product.

a. Include construction details, material descriptions, dimensions of individual components and profiles and finishes.

B. Shop Drawings:

1. Elevations, sections, and installation details for each wall-opening condition.
2. Details of construction of each component, including dimensioned profiles and metal thicknesses.
3. Locations of reinforcements and preparations for hardware.
4. Details of anchorages, joints, splices, connections, and accessories.
5. Details of trim and glazing.

C. Samples for Verification: Actual sample of finished products for each type of the following products:

1. Framing Member and Finish: 12 inches long. Include trim.
2. Window Corner Fabrication and Finish: 12-by-12-inch-long, full-size corner, including full-size sections of extrusions with removable stops.
3. Door Finish: Manufacturer's standard-size unit, but not less than 3 inches square

D. Product Schedule: Use same designations indicated on Drawings. Coordinate with door hardware schedule and glazing.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For interior aluminum doors and frames.

1.5 QUALITY ASSURANCE

A. Egress Door Inspector Qualifications: Documented as complying with requirements in NFPA 101 and having Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAI) certification.

B. Removeable Mullions: Comply with: ANSI/BMHA A156.3.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Aluminum Doors and Frames manufactured by: Apogee Architectural Metals, EFCO, 7800 International Dr., Wausau, Wisconsin 54401, 877 752 3432; inf@apogeearchmetals.com; apogeearchmetals.com and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed or comparable products manufactured by the following, provided products are in compliance with the performance criteria:

1. Kawneer Company, Inc., 555 Guthridge Court, Norcross, GA 30092-3503, 770 449 5555, NationalAccounts@arconic.com; kawneer.com.

2. YKK AP America, 101 Marietta Street NW, Suite 2100, Atlanta, GA 30303. 678-838-6000. www.ykkap.com

2.2 SOURCE LIMITATIONS

A. Obtain all components of aluminum-framed entrance and storefront system, including framing and accessories, from single manufacturer

2.3 INTERIOR ALUMINUM DOORS AND FRAMES

A. Basis-of-Design Products: Subject to compliance with requirements, provide EFCO Corporation; Series 401 frame system or a comparable product by one of the following:
   1. Kawneer: Trifab® VersaGlaze® 450.
   2. YKK AP: YES 45 FI.

B. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.

   1. Interior Vestibule Framing Construction: Non-thermal.
   2. Frame Dimensions: basis of design Series 401 frame system manufactured by Apogee Architectural Metals, EFCO as indicated on drawings.
   3. Glazing System: Retained mechanically with gaskets on four sides.
   4. Glazing Plane: Field verified to match existing glazing plane.
   5. Finish to match each respective existing finish per building:

      a. High-performance organic finish
      b. Clear anodic finish
      c. Color anodic finish

   6. Fabrication Method: Field-fabricated stick system.
   7. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
   8. Steel Reinforcement: As required by manufacturer.
   9. Keyed Removable Mullions:

      a. Material: Extruded aluminum; Minimum Wall thickness: 1/8 inch. Verify with Delegated Design Engineer.
      b. Dimensions: Match entrance frame size.
      c. Locking Mechanism: Secured with standard mortise r rim cylinder located at the head of the mullion.
      d. Operation: Mullion must be removable by a singe turn of the key and must sef-lock upon reinstallation without requiring a key.
      e. Fittings: Cast stainless steel or aluminum head and floor brackets. Provide low profile floor plates to prevent trip hazards.
      f. Finish: Match adjacent aluminum frame finish.
      g. Accessories: Provide stabilizers to prevent door rattling.

   10. Backer Plates: Manufacturer's standard, continuous backer plates for

C. Source Limitations: Obtain interior aluminum doors and frames from single source from single manufacturer.

D. Aluminum Framing: ASTM B221 (ASTM B221M), with alloy and temper required to suit structural and finish requirements, and not less than 0.062 inch (1.6 mm) thick.

E. Door Frames: Extruded aluminum, reinforced for hinges, strikes, and closers.

F. Glazing Frames: Extruded aluminum, for glass thickness indicated on Drawings.

G. Trim: Extruded aluminum, not less than 0.062 inch (1.6 mm) thick; removable, snap-in casing trim and glazing stops without exposed fasteners.

1. Trim Style: As indicated in Door Hardware Schedule at the end of this section.

H. Aluminum-Framed Glass Doors: Manufacturer's standard, factory-assembled doors.

1. Stile Width: Match Existing.
2. Top-Rail Height: Match Existing.
3. Bottom-Rail Height: Match Existing.

2.4 ACCESSORIES

A. Fasteners: Aluminum, nonmagnetic, stainless steel, zinc-plated steel or other noncorrosive metal fasteners compatible with frames, stops, panels, reinforcement plates, hardware, anchors, and other items being fastened.

B. Corner Reinforcements and Alignment Clips: Manufacturer's standard concealed units to provide accurately fitted hairline joints at butted and mitered connections.

C. Door Silencers: Manufacturer's standard continuous mohair, wool pile, or vinyl seals, black

D. Glazing Gaskets: Manufacturer's standard extruded or molded rubber or plastic, to accommodate glazing thickness indicated; black.

E. Glazing Stops: Removable to allow glazing replacement without framing disassembly.

F. Glass: Specified in Section 088000 "Glazing."

G. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 "Door Hardware."

2.5 FABRICATION

A. Hardware Preparation: Factory prepare components to receive templated mortised hardware; include cutouts, reinforcements, mortising, drilling, and tapping.

1. Reinforce doors and frames to receive non-templated mortised and surface-mounted hardware.
2. Locate hardware as indicated in door hardware schedule in Section 08 71 00 “Door Hardware”.

B. Glazing Stops: Locate removable stops on inside of spaces accessed by locking doors.

C. Fabricate components to allow secure installation without exposed fasteners and to provide accurately fitted hairline joints at butted and mitered connections.

D. Fabricate frame components 96 inches (2440 mm) long or shorter as one piece. Where splices are required, no individual piece may be less than 48 inches (1220 mm) long.

2.6 ALUMINUM FINISHES

A. Comply with NAAMM/NOMMA AMP 500 for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. High-Performance Organic Finish, Two-Coat PVDF: Fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat.

1. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Color and Gloss: As selected by Architect from manufacturer's full range to match existing color and gloss per respective existing building finishes.

E. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker. Match each respective existing building finishes.

F. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.

1. Color: As selected by Architect from full range of industry colors and color densities Match existing color and gloss per each respective existing building finishes..

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF ALUMINUM DOORS AND FRAMES

A. Install aluminum frames plumb, rigid, properly aligned, and securely fastened in place in accordance with manufacturer's written instructions.

1. Fasten to suspended ceiling grid on maximum 48-inch centers, using sheet metal screws or other fasteners approved by frame manufacturer.

2. Use concealed installation clips to produce tightly fitted and aligned splices and connections.
3. Secure clips to extruded main-frame components and not to snap-in or trim members.
4. Do not leave screws or other fasteners exposed to view when installation is complete.

B. Glass: Install glass in accordance with Section 088000 "Glazing" and aluminum-frame manufacturer's written instructions.

C. Doors: Install doors aligned with frames and fitted with required hardware.

1. Hardware: Install in accordance with Section 087100 "Door Hardware" and aluminum-frame manufacturer's written instructions.

D. Removable Mullions

1. Install in accordance with manufacturer’s templates and instructions.
2. Ensure the top bracket is securely fastened to the frame header and the bottom bracket is anchored to the floor.
3. Verify that rim exit device strikes are correctly shimmed for proper latching into the mullion.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Egress Door Assembly Acceptance Testing: Test and inspect egress doors in accordance with NFPA 101.

C. Repair or remove and replace installations where testing and inspections indicate that they do not comply with specified requirements.

D. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

E. Prepare test and inspection reports.

3.4 ADJUSTING AND CLEANING

A. Inspect installation, correct misalignments, and tighten loose connections.

B. Doors: Adjust doors to operate smoothly and easily, without binding or warping. Adjust hardware to function smoothly in accordance with manufacturer's written instructions.

C. Clean exposed frame surfaces promptly after installation, using cleaning methods recommended in writing by frame manufacturer and in accordance with AAMA 609 & 610.

D. Touch Up: Immediately after installation, repair damaged areas of aluminum finishes and touchup in accordance with manufacturer's written instructions.

3.5 DOOR HARDWARE SCHEDULE – ALUMINUM ENTRANCE DOORS

A. Hardware Set 3: (Single Doors AD-1C, AD-3A, UU-1G, UU-6C, UU-7G, UU-8G, UU-12D and UU-13D):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Door Trim: Provided by Door Manufacturer:

    a. Pull: Dummy Trim (1) required.
    b. Push: Exit Only (1) required.

5. Swing Door Operator: LCN 4600 with stop arm provided by Campus - installed by Contractor (1) required.
6. Surface Closer: BHMA A156.4, LCN 4040XP with stop function - push side mounting. (1) required, provided by Campus, installed by Contractor.
7. Metal Door Protection BHMA A156.16 push side, 8 inches high.

Theory of Operation: Door always open from both sides by use of pulls or push plates. Door can be opened by push plates that activate swing door operator. (These interior doors work in sequential operation, the exterior and interior swing door openers are linked to provide hands-free passage through both doors after only a single pressing of one push plate, coordinated with the access control device.)

B. Hardware Set 4: (Single Doors AD-1D, AD-1E, UU-1D, UU-6D, UU-6E, UU-7D, UU-7E, UU-7F, UU-8D, UU-8E, UU-8F, UU-12E, UU-12F, UU-12G, UU-13E, UU-13F and UU-13G):

1. Butts: Heavy-Duty Hinge - provided by door manufacturer: (4) required.
2. Door Trim: Provided by Door Manufacturer:

    a. Push: Exit Only (1) required.
    b. Pull: Dummy Trim (1) required

3. Surface Closer: BHMA A156.4, LCN 4040XP with stop function - push side mounting. (1) required, provided by Campus, installed by Contractor.
4. Metal Door Protection BHMA A156.16 push side, 8 inches high (1) required.

C. Hardware Set 21: (Pair Doors LG-7A, LG-9A, LI-1C, LI-6C, LI-7B, and UU-15A).

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (7) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Door Trim: Provided by Door Manufacturer.

a. Pull: Dummy Trim (2) required.
b. Push: Exit Only. (2) required.

5. Swing Door Operator: LCN 4600 with stop arm on RHR leaf provided by Campus - installed by Contractor (1) required.
6. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (1) required, provided by Campus, installed by Contractor.
7. Metal Door Protection: BHMA A156.16 - (2) required: push side, 8 inches high.

D. Hardware Set 22: (Pair Doors LG-8A, LI-1D, LI-1E, LI-6D, LI-6E, LI-7, LI-7A, UU-1E, UU-1F and U14A)

1. Butts: Heavy-Duty Hinge provide d by Campus – installed by Contractor, (8) required.
2. Door Trim: Provided by Door Manufacturer.

a. Pulls: Dummy Trim (2) required.
b. Push: Exit Only (2) required.

3. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (2) required, provided by Campus, installed by Contractor.
4. Metal Door Protection: BHMA A156.16 - (2) required: push side, 8 inches high.

Note: Some Hardware Set numbers have been skipped on purpose to clarify who provides which items. See Section 08 71 00 “Door hardware” for complete list of hardware sets. Coordinate the work of this section with Section 08 41 13 “Aluminum-Framed Entrances and Storefronts” and Section 08 71 00 “Door Hardware”.

END OF SECTION 08 11 16

SECTION 08 31 13 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Flush access doors with exposed flanges.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, fire ratings, material descriptions, dimensions of individual components and profiles, and finishes.

B. Product Schedule: For access doors and frames. Use same designations indicated on Drawings.

1.3 INFORMATIONAL SUBMITTALS

A. Field Quality-Control Reports: For fire-rated door inspections.

B. Qualification Statements: For testing and inspecting agency.

1. Fire-Rated Door Inspector: Submit documentation of compliance with NFPA 80, Section 5.2.3.1.
2. Submit copy of DHI Fire and Egress Door Assembly Inspector (FDAI) certificate.

1.4 CLOSEOUT SUBMITTALS

A. Record Documents: For fire-rated doors, list of applicable room name and number in which access door is located.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Rated Access Doors and Frames: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, in accordance with NFPA 252 or UL 10B.

2.2 ACCESS DOORS AND FRAMES

A. Flush Access Doors with Exposed Flanges:

1. Basis of Design: JL Industries, Model TM exposed frame access panel.
2. Description: Face of door flush with frame, with exposed flange and concealed hinge.
3. Optional Features: Piano hinges.
4. Locations: Wall and ceiling.
5. Door Size: 24 inches (610 mm) square unless noted or otherwise required.
6. Metallic-Coated Steel Sheet for Door: Nominal 0.064 inch (1.63 mm), 16 gage, factory primed.
7. Frame Material: Same material, thickness, and finish as door.
8. Latch and Lock: Spanner-head wrench or key operated cam latch as directed by Owner.

2.3 FIRE-RATED ACCESS DOORS AND FRAMES

A. Fire-Rated Access Doors with Exposed Flanges:

1. Description: Door flush with frame; with exposed flange, self-closing door, and concealed hinge.
2. Locations: Wall and ceiling.
3. Door Size: As required to access related equipment; 18 inches (457 mm) square min.
4. Fire-Resistance Rating: Not less than that of adjacent construction being penetrated..
5. Retain "Uncoated Steel Sheet for Door," "Metallic-Coated Steel Sheet for Door," or "Stainless Steel Sheet for Door" Subparagraph below. Because gage thickness is not defined by industry standards, decimal thickness must be indicated. Thicknesses shown are examples only; revise to suit Project. Uninsulated access doors require thicker steel sheet.
6. Metallic-Coated Steel Sheet for Door: Nominal 0.040 inch (1.02 mm), 20 gage, factory primed.
7. Frame Material: Same material, thickness, and finish as door.
8. Latch and Lock: Self-latching door hardware.

    a. Public Locations: Cam latch, key operated.
    b. Employee Locations: Cam latch, screwdriver operated

2.4 MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A879/A879M, with cold-rolled steel sheet substrate complying with ASTM A1008/A1008M, Commercial Steel (CS), exposed.

C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

D. Frame Anchors: Same material as door face.

E. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel in accordance with ASTM A153/A153M or ASTM F2329/F2329M.

2.5 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish mounting holes, attachment devices and fasteners of type required to secure access doors to types of supports indicated.

D. Latch and Lock Hardware:

1. Quantity: Furnish number of latches and locks required to hold doors tightly closed.
2. Keys: Furnish two keys per lock and key all locks alike.

2.6 FINISHES

A. Comply with NAAMM/NOMMA AMP 500 for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Painted Finishes: Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

1. Factory Primed: Apply manufacturer's standard, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

3.3 ADJUSTING

A. Adjust doors and hardware, after installation, for proper operation.

END OF SECTION 083113

SECTION 08 41 13 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior Aluminum-framed entrance and storefront systems.
2. Removeable Mullions

B. Related Requirements:

1. Section 08 11 16 "Interior Aluminum Doors and Frames" for interior aluminum framing.
2. Section 08 44 13 “Glazed Aluminum Curtain Walls” for additional exterior fenestration.
3. Section 08 71 00 “Door Hardware for hardware items not installed under this Section.
4. Section 08 80 00 "Glazing" for field-installed insulated panels, glass and glazing.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings:

1. Plans, elevations, sections, full-size details, and attachments to other work.
2. Details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
3. Include Full-size isometric details of each type of vertical-to-horizontal intersection of aluminum-framed entrance and storefront systems, showing the following:

a. Joinery, including concealed welds.
b. Anchorage.
c. Expansion provisions.
d. Glazing.
e. Flashing and drainage.

4. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
5. Include point-to-point wiring diagrams showing the following:

    a. Power requirements for each electrically operated door hardware.
    b. Location and types of switches, signal device, conduit sizes, and number and size of wires.

6. Signed and sealed by the qualified professional engineer responsible for their preparation.

C. Samples for Verification: For each exposed finish in Manufacturers' standard size.

D. Fabrication Sample: Of each vertical-to-horizontal intersection of assemblies, made from 12-inch lengths of full-size components and showing details of the following:

1. Joinery, including concealed welds.
2. Anchorage.
3. Expansion provisions.
4. Glazing.
5. Flashing and drainage.

E. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

F. Delegated Design Submittals: For aluminum-framed entrances and storefront systems, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

A. Energy Performance Certificates: For aluminum-framed entrance and storefront systems, accessories, and components, from manufacturer.

1. Basis for Certification: NFRC-certified energy performance values for each aluminum-framed entrance and storefront system.

B. Product Test Reports: For aluminum-framed entrance and storefront systems, for tests performed by manufacturer and witnessed by a qualified testing agency.

C. Qualification Statements:

1. For Installer and field testing agency.

D. Delegated Design Engineer Qualifications: For aluminum-framed entrance and storefront systems.

E. Sample Warranties: For aluminum-framed entrance and storefront systems.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For aluminum-framed entrance and storefront systems.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:

1. Authorized representative who is trained and approved by manufacturer.

B. Delegated Design Engineer Qualifications: A professional engineer who is legally qualified to practice in New York State and who is experienced in providing engineering services of the type indicated.

C. Laboratory Mockup Testing Agency Qualifications: Qualified in accordance with ASTM E699 for testing indicated.

D. Testing Agency Qualifications: Qualified in accordance with ASTM E699 for testing indicated[and accredited by IAS or ILAC Mutual Recognition Arrangement as complying with ISO/IEC 17025] and acceptable to Owner and Architect.

E. Egress Door Inspector Qualifications:

1. Inspector for field quality-control inspections of egress door assemblies to comply with qualifications set forth in NFPA 101, Ch. 7 "Means of Egress," Section "Means of Egress Components," Article "Inspection of Door Openings."

F. Removeable Mullions: Comply with: ANSI/BMHA A156.3.

G. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.

1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.7 WARRANTY

A. Special Warranty: Manufacturer and Installer agree to repair or replace components of aluminum-framed entrance and storefront systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures.

b. Faulty operation of entrances.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Period: 10 years from date of Substantial Completion.

B. Special Finish Warranty, Factory-Applied Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Warranty Period: 10 years from date of Substantial Completion.

C. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D 4214.
c. Cracking, peeling, or chipping.

2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Aluminum Doors and Frames manufactured by: Apogee Architectural Metals, EFCO, 7800 International Dr., Wausau, Wisconsin 54401, 877 752 3432; inf@apogeearchmetals.com; apogeearchmetals.com and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed or comparable products manufactured by the following, provided products are in compliance with the performance criteria:

1. Kawneer Company, Inc., 555 Guthridge Court, Norcross, GA 30092-3503, 770 449 5555, NationalAccounts@arconic.com; kawneer.com.

2. YKK AP America Inc.,101 Marietta St. NW, Suite 2100, Atlanta, GA 30303, (678) 838 6000, contact.usa@ykk.com; ykkap.com.

2.2 Source Limitations:

A. Obtain all components of aluminum-framed entrance and storefront system, including framing and accessories, from single manufacturer.

2.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 35 73 "Delegated Design," to design aluminum-framed entrance and storefront systems.

B. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrance and storefront systems representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Aluminum-framed entrance and storefront systems to withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:

a. Thermal stresses transferring to building structure.
b. Glass breakage.
c. Noise or vibration created by wind and thermal and structural movements.
d. Loosening or weakening of fasteners, attachments, and other components.
e. Failure of operating units.

C. Structural Loads:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.

D. Deflection of Framing Members Supporting Glass: At design wind load, as follows:

1. Deflection Normal to Wall Plane: Limited to 1/175 of length of span of the framing member for lengths of up to 13 feet 6 inches (4.1 m) and to 1/240 of length of span of the framing member plus 1/4 inch (6.35 mm) for lengths greater than 13 feet 6 inches (4.1 m).
2. Deflection Parallel to Glazing Plane: Limited to amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 inch (3.2 mm).

a. Operable Units: Provide a minimum 1/16-inch (1.6-mm) clearance between framing members and operable units.

E. Structural: Test in accordance with ASTM E330/E330M as follows:

1. When tested at positive and negative wind-load design pressures, storefront assemblies, including entrance doors, do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, storefront assemblies, including entrance doors and anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not less than 10 seconds.

F. Water Penetration under Static Pressure: Test in accordance with ASTM E331 as follows:

1. No evidence of water penetration through fixed glazing and framing areas, including entrance doors, when tested in accordance with a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 15 lbf/sq. ft. (720 Pa).

G. Water Penetration under Dynamic Pressure: Test in accordance with AAMA 501.1 as follows:

1. No evidence of water penetration through fixed glazing and framing areas when tested at dynamic pressure equal to 20 percent of positive wind-load design pressure, but not less than 15 lbf/sq. ft. (720 Pa).
2. Maximum Water Leakage: In accordance with AAMA 501.1 No uncontrolled water penetrating assemblies or water appearing on assemblies' normally exposed interior surfaces from sources other than condensation. Water leakage does not include water controlled by flashing and gutters, or water that is drained to exterior.

H. Energy Performance: Certified and labeled by manufacturer for energy performance as follows:

1. Thermal Transmittance (U-factor):

   a. Fixed Glazing and Framing Areas: U-factor for the system of not more than 0.38 Btu/sq. ft. x h x deg F (2.15 W/sq. m x K) as determined in accordance with NFRC 100.
   b. Entrance Doors: U-factor of not more than 0.77 Btu/sq. ft. x h x deg F (4.37 W/sq. m x K) as determined in accordance with NFRC 100.

2. Solar Heat-Gain Coefficient (SHGC):

   a. Fixed Glazing and Framing Areas: SHGC for the system of not more than 0.40 as determined in accordance with NFRC 200.
   b. Entrance Doors: SHGC of not more than 0.30 as determined in accordance with NFRC 200.

3. Air Leakage:

   a. Fixed Glazing and Framing Areas: Air leakage for the system of not more than 0.06 cfm/sq. ft. (0.30 L/s per sq. m) at a static-air-pressure differential of [1.57 lbf/sq. ft. (75 Pa)] when tested in accordance with ASTM E283.

4. Below is the maximum air-leakage rate based on IECC and ASHRAE/IES 90.1 for glazed swinging entrance doors. Retain first subparagraph below if required.

    a. Entrance Doors: Air leakage of not more than 1.0 cfm/sq. ft. (5.08 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).

5. Condensation Resistance Factor (CRF):

    a. Fixed Glazing and Framing Areas: CRF for the system of not less than **60** as determined in accordance with AAMA 1503.
    b. Entrance Doors: CRF of not less than 57 as determined in accordance with AAMA 1503.

I. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
2. Thermal Cycling: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested in accordance with AAMA 501.5.

    a. High Exterior Ambient-Air Temperature: That which produces an exterior metal-surface temperature of 180 deg F (82 deg C).
    b. Low Exterior Ambient-Air Temperature: 0 deg F (minus 18 deg C).
    c. Interior Ambient-Air Temperature:75 deg F (24 deg C).

2.4 ALUMINUM-FRAMED ENTRANCE AND STOREFRONT SYSTEMS

A. Basis-of-Design Products: Subject to compliance with requirements, provide EFCO Corporation; X-Therm Systems, Series 403X frame system or a comparable product by one of the following:
1. Kawneer: Trifab® 451UT.
2. YKK AP: YES 45 XT.

B. Framing Members: Manufacturer's extruded aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Framing Construction: Thermally broken
2. Glazing System: Retained mechanically with gaskets on four sides
3. Glazing Plane: Match Existing.
4. Frame Dimensions: 2+/- inches (51 mm) wide by 4 ½ +/-inches (114 mm) deep. Field Verify to Match Existing as required to comply with State Historic Preservation Office requirements.
5. Glazing System: Retained mechanically with gaskets on four sides.
6. Glazing Plane: Center.
7. Finish to match each respective existing finish per building:

a. High-performance organic finish.
b. Front Finish: Color - anodic finish to Match Existing - Field verify existing finish and color.

8. Fabrication Method: Field-fabricated stick system.
9. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
10. Steel Reinforcement: As required by manufacturer.
11. Keyed Removable Mullions:

a. Material: Extruded aluminum; Minimum Wall thickness: 1/8 inch. Verify with Delegated Design Engineer.
b. Dimensions: Match entrance frame size.
c. Locking Mechanism: Secured with standard mortise r rim cylinder located at the head of the mullion.
d. Operation: Mullion must be removable by a singe turn of the key and must sef-lock upon reinstallation without requiring a key.
e. Fittings: Cast stainless steel or aluminum head and floor brackets. Provide low profile floor plates to prevent trip hazards.
f. Finish: Match adjacent aluminum frame finish.
g. Accessories: Provide stabilizers to prevent door rattling.

C. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.

D. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

2.5 ENTRANCE DOOR SYSTEMS

A. Basis-of-Design Products: Subject to compliance with requirements, provide EFCO Corporation; EFCO Series D500 Wide Stile Doors (Field Verify - Match Existing) or a comparable product by one of the following:
1. Kawneer: 500 Standard Entrance.
2. YKK AP: 50D Entrance.

B. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.

1. Door Construction: Match Existing overall thickness, with minimum 0.125-inch-thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
2. Door Design:

a. Wide Stile Design: 5-inch +/- (127-mm) nominal width by 1-3/4 inches +/- (44 mm) thick to match existing as required to comply with State Historic Preservation Office requirements.

b. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.

3. Door Design: As indicated
4. Glazing Stops and Gaskets: Beveled, snap-on, extruded-aluminum stops and preformed gaskets.

   a. Provide non-removable glazing stops on exterior side of door.

5. Finish: Match adjacent storefront framing finish.
6. Bottom Rail: 10 inches (254 mm) in compliance with ANSI A117.1.
7. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets. finish.
8. Entrance Door Hardware
9. Removable Mullions

   a. Install in accordance with manufacturer's templates and instructions.
   b. Ensure the top bracket is securely fastened to the frame header and the bottom bracket is anchored to the floor.
   c. Verify that rim exit device strikes are correctly shimmed for proper latching into the mullion.

2.6 Finish: Match adjacent storefront framing

A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 "Door Hardware."

B. General: Provide entrance door hardware and entrance door hardware sets indicated in door and frame schedule for each entrance door, to comply with requirements in this Section.

1. Entrance Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and products equivalent in function and comparable in quality to named products
2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
3. Opening-Force Requirements:

   a. Egress Doors: Not more than 15 lbf (67 N) to release the latch and not more than 30 lbf (133 N) to set the door in motion and not more than 15 lbf (67 N) to open the door to its minimum required width.
   b. Accessible Interior Doors: Not more than 5 lbf (22.2 N) to fully open door.

C. Designations: Requirements for design, grade, function, finish, quantity, size, and other distinctive qualities of each type of entrance door hardware are indicated in "Entrance Door Hardware Sets" Article. Products are identified by using entrance door hardware designations as follows:

1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in "Entrance Door Hardware Sets" Article.
2. References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.

D. Operating Trim: BHMA A156.6; Type 304 stainless steel.

1. Pulls (Von Duprin 990DT – Dummy Trim and, 990NL – Night Latch):

a. Escutcheon Size: 3" x 14-13/16" x 3/32"
b. Pulls Center to Center: 5-1/2"
c. Projection: 2"
d. Corners: Rounded.

2. Push Plates: (Von Duprin 990EO Exit Only):

a. Escutcheon Size: 3" x 14-13/16” x 3/32"
b. Corners: Rounded.

E. Removable Mullions: BHMA A156.3 extruded aluminum.

1. Provide removable mullions listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing in accordance with UL 305. Use only mullions that have been tested with exit devices to be used.

F. Weather Stripping: Manufacturer's standard replaceable components.

1. Compression Type: Made of ASTM D2000 molded neoprene or ASTM D2287 molded PVC.
2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

G. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.

H. Thresholds: BHMA A156.21 raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch.

2.7 GLAZING

A. Glazing: Comply with Section 088000 "Glazing."

B. Weatherseal Sealants: ASTM C920 for Type S; Grade NS; Class 25; Uses NT, G, A, and O; chemically curing silicone formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and structural-sealant-glazed storefront manufacturers for this use.

1. Color: Match structural sealant.

2.8 MATERIALS

A. Sheet and Plate: ASTM B209 (ASTM B209M).

B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221 (ASTM B221M).

C. Structural Profiles: ASTM B308/B308M.

D. Steel Reinforcement:

1. Structural Shapes, Plates, and Bars: ASTM A36/A36M.
2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.
3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.

E. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods in accordance with recommendations in SSPC-SP COM, and prepare surfaces in accordance with applicable SSPC standard.

2.9 ACCESSORIES

A. Automatic Door Operators: Section 087100 "Door Hardware."

B. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.
3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.

C. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.

1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A123/A123M or ASTM A153/A153M requirements.

D. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials

E. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil thickness per coat.

F. Rigid PVC filler.

2.10 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Physical and thermal isolation of glazing from framing members.
4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
5. Provisions for field replacement of glazing from exterior.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Storefront Framing: Fabricate components for assembly using shear-block system.

F. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

1. At interior and exterior doors, provide compression weatherstripping at fixed stops.

G. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

H. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

I. After fabrication, mark components to identify their locations in Project in accordance with Shop Drawings.

2.11 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker. Match each respective existing building finishes.

B. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker. Match each respective existing building finishes.

1. Color: As selected by Architect from full range of industry colors and color densities

C. High-Performance Organic Finish, Two-Coat PVDF: Fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat.

1. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Color and Gloss: As selected by Architect from manufacturer's full range to match existing color and gloss per each respective existing building finishes.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF ALUMINUM-FRAMED ENTRANCE AND STOREFRONT SYSTEMS

A. Comply with manufacturer's written instructions.

B. Do not install damaged components.

C. Fit joints to produce hairline joints free of burrs and distortion.

D. Rigidly secure nonmovement joints.

E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.

F. Seal perimeter and other joints watertight unless otherwise indicated.

G. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

H. Set continuous sill members and flashing in full sealant bed, as specified in Section 07 92 00 "Joint Sealants," to produce weathertight installation.

I. Install joint filler behind sealant as recommended by sealant manufacturer.

J. Install components plumb and true in alignment with established lines and grades.

K. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

L. Install entrance doors to produce smooth operation and tight fit at contact points.

1. Install Entrance Doors to produce weathertight enclosure and tight fit at weather stripping.
2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware in accordance with entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

M. Install glazing as specified in Section 088000 "Glazing."

3.3 ERECTION TOLERANCES

A. Install aluminum-framed entrance and storefront systems to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet
2. Level: 1/8 inch in 20 feet
3. Alignment:

a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.
b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch wide, limit offset from true alignment to 1/8 inch .
c. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.

4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests.

B. Tests: Perform the following tests on representative areas of aluminum-framed entrance and storefront systems

1. Water-Spray Test: Before installation of interior finishes has begun, areas designated by Architect to be tested in accordance with AAMA 501.2 and to not evidence water penetration.

a. Perform a minimum of three tests in areas as directed by Architect.

2. Air Leakage: ASTM E783 at 1.5 times the rate specified for laboratory testing in "Performance Requirements" Article but not more than 0.09 cfm/sq. ft. (0.45 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).

a. Perform a minimum of three tests in areas as directed by Architect.

3. Water Penetration: ASTM E1105 at a minimum uniform and cyclic static-air-pressure differential of 0.67 times the static-air-pressure differential specified for laboratory testing in "Performance Requirements" Article, but not less than 6.24 lbf /sq. ft. (300 Pa), and to not evidence water penetration.

C. Inspection Agency: Engage a qualified inspector to perform inspections.

D. Inspections:

1. Egress Door Inspections: Inspect each aluminum-framed entrance door equipped with panic hardware, located in an exit enclosure, electrically controlled, and equipped with special locking arrangements, in accordance with NFPA 101, Ch. 7 "Means of Egress," Section "Means of Egress Components," Article "Inspection of Door Openings."

E. Aluminum-framed entrance and storefront systems will be considered defective if they do not pass tests and inspections.

F. Prepare test and inspection reports.

3.5 MAINTENANCE SERVICE

A. Entrance Door Hardware Maintenance:

1. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of entrance door hardware.
2. Initial Maintenance Service: Beginning at Substantial Completion, provide six months' full maintenance by skilled employees of entrance door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper entrance door hardware operation at rated speed and capacity. Use parts and supplies that are the same as those used in the manufacture and installation of original equipment.

3.6 DOOR HARDWARE SCHEDULE – ALUMINUM ENTRANCES

A. Hardware Set 1: (Single Doors AD-1, AD-3, UU-7C, UU-8C, UU-12 and UU-13):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.

3. Junction Box: (1) required.
4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Swing Door Operator: LCN 4600 with stop arm provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Night Latch Provided by Door Manufacturer.
7. Metal Door Protection BHMA A156.16 (1) required: push side, 8 inches high.
8. Weatherstripping: Supplied by Door Manufacturer.
9. Threshold: Head, jambs and sill. Supplied by Door Manufacturer.

Theory of Operation: Door always open from interior by use of exit device. Door is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door can be opened by push plates that activate swing door operator that is coordinated with access control. (These exterior doors work in sequential operation. The exterior and interior swing door openers are linked to provide hands-free passage through both doors after only a single pressing of one push plate, coordinated with the access control device.) Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate door operator and remote dogging with building access control system. Door is Fail Secure.

B. Hardware Set 2: (Single Doors AD-1A, AD-1B, UU-1C, UU-6A, UU-6B, UU-7, UU-7A, UU-7B, UU-8, UU-8A, UU-8B, UU-12A, UU-12B, UU-12C, UU-13A, UU-13B and UU-13C):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Operating Trim: Provided by Door Manufacturer:

    a. Pull: Dummy Trim (1) required

6. Surface Closer: BHMA A156.4, LCN 4040XP with stop function - push side mounting. (1) required, provided by Campus, installed by Contractor.
7. Metal Door Protection BHMA A156.16 push side, 8 inches high. (1) required.
8. Weatherstripping: Supplied by Door Manufacturer.
9. Threshold: Head, jambs and sill. Supplied by Door Manufacturer.

Theory of Operation: Door always unlatched from interior by use of exit device. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Door status reported by use of electronic hinge connected to security system. Coordinate remote dogging with building access control system. Door is Fail Secure.

C. Hardware Set 5: (Single Door LG-1):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Swing Door Operator: LCN 4600 with stop arm provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Provided by Door Manufacturer:

    a. Pull: Night Latch (1) required

7. Metal Door Protection BHMA A156.16 push side, 8 inches high. (1) required.
8. Weatherstripping: Head, jambs and sill. Provided by Door Manufacturer.
9. Threshold: Provided by Door Manufacturer.

Theory of Operation: Door always open from interior by use of exit device. Door is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door can be opened by push plates that activate swing door operator that is coordinated with access control. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate door operator and remote dogging with building access control system. Provide for the separation of dissimilar metals. Door is Fail Secure.

D. Hardware Set 6: (Single Door UU-1):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Swing Door Operator: LCN 4600 with stop arm provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Night Latch (1) required. Provided by Door Manufacturer
7. Metal Door Protection BHMA A156.16 push side, 8 inches high. (1) required.
8. Weatherstripping: Head, jambs and sill. Provided by Door Manufacturer.
9. Threshold. Provided by Door Manufacturer

Theory of Operation: Door always open from interior by use of exit device. Door is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door can be opened by push plates that activate swing door operator that is coordinated with access control. Door is unlatched and relatched from exterior by security

system remotely for day/night functioning. Coordinate door operator and remote dogging with building access control system. Door is Fail Secure.

E. Hardware Set 7: (Single Door UU-4A):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Swing Door Operator: LCN 4600 with stop arm provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Night Latch Provided by Door Manufacturer.
7. Metal Door Protection BHMA A156.16 (1) required: push side, 8 inches high.
8. Weatherstripping: Head, jambs and sill. Supplied by Door Manufacturer.
9. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Door always open from interior by use of exit device. Door is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door can be opened by push plates that activate swing door operator that is coordinated with access control. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate door operator and remote dogging with building access control system. Door is Fail Secure.

F. Hardware Set 8: (Single Door UU-6):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Operating Trim: Provided by Door Manufacturer:

    a. Pull: Night Latch (1) required.

6. Surface Closer: BHMA A156.4, LCN 4040XP with stop function - push side mounting. (1) required, provided by Campus, installed by Contractor.
7. Metal Door Protection BHMA A156.16 push side, 8 inches high. (1) required.
8. Weatherstripping: Head, jambs and sill. Supplied by Door Manufacturer.
9. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Door always unlatched from interior by use of exit device. Door is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by Access Control Device provided by Security Contractor. Door is unlatched and relatched from exterior by security system

remotely for day/night functioning. Door status reported by use of electronic hinge connected to security system. Coordinate remote dogging with building access control system. Door is Fail Secure.

G. Hardware Set 10: (Unequal Leaf Doors LI-2):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Swing Door Operator: LCN 4600 with stop arm on Active Leaf: provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Provided by Door Manufacturer.

    a. Pull - Active Leaf: Night Latch (1) required.
    b. Push - Inactive Leaf: Exit Only. (1) required.

7. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (1) required, provided by Campus, installed by Contractor.
8. Manual Flush Bolts: Rockwood 555. (2) required - inactive leaf:
9. Metal Door Protection BHMA A156.16 - (1) required: push side, active leaf, 8 inches high.
10. Weatherstripping: Head, jambs, meeting stile and sill. Provided by Door Manufacturer.
11. Threshold. Provided by Door Manufacturer.

Theory of Operation: Door always open from interior by use of exit device. Door is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door can be opened by push plates that activate swing door operator that is coordinated with access control. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate door operator and remote dogging with building access control system. Provide for the separation of dissimilar metals. Door is Fail Secure.

H. Hardware Set 16: (Pair Doors LG-6 and UU-14.):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, exterior lock cylinder hardware, night latch function. RHR leaf.
   Provided by Campus - installed by Contractor (1) required.
5. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, dunny trim. Emergency Only. Provided by Campus - installed by Contractor (1) required.

6. Operating Trim: Provided by Door Manufacturer.

    a. Pull – Active Leaf: Night Latch (1) required.
    b. Pull: -Inactive Leaf: Dummy Trim (1) required.

7. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (2) required, provided by Campus, installed by Contractor.
8. Metal Door Protection BHMA A156.16 - (2) required: push side, active leaf, 8 inches high.
9. Weatherstripping: Head, jambs, meeting stile and sill. Supplied by Door Manufacturer.
10. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Door always open from interior by use of exit devices. Door is unlatched from exterior by access control device provided by Security Contractor. Active leaf is locked and unlocked from exterior by use of keyed cylinder. Door status reported by use of door electronic hinges connected to security system. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate remote dogging with building access control system. Door is Fail Secure.

I. Hardware Set 17: (Pair Doors LI-1)

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, exterior lock cylinder hardware, night latch function. RHR leaf.
   Provided by Campus - installed by Contractor (1) required.
5. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, dummy trim. Emergency Only. Provided by Campus - installed by Contractor (1) required.
6. Swing Door Operator: LCN 4600 with stop arm on RHR leaf provided by Campus - installed by Contractor (1) required.
7. Operating Trim: Provided by Door Manufacturer.

    a. Pull – Active Leaf: Night Latch (1) required.
    b. Pull: -Inactive Leaf: Dummy Trim (1) required.

8. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (1) required, provided by Campus, installed by Contractor.
9. Metal Door Protection: BHMA A156.16 - (2) required: push side, 8 inches high.
10. Weatherstripping: Head, jambs, meeting stile and sill. Supplied by Door Manufacturer.
11. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Doors always open from interior by use of exit devices. Active leaf is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. (These exterior doors work in sequential operation. The exterior

and interior swing door openers are linked to provide hands-free passage through both doors with only a single pressing of one push plate, coordinated with the access control device.) Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate remote dogging with building access control system. Door is Fail Secure.

J. Hardware Set 18: (Pair Doors LG-7, LG-9 and UU-15)

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, exterior lock cylinder hardware, night latch function. RHR leaf.
   Provided by Campus - installed by Contractor (1) required.
5. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, dummy trim. Emergency Only. Provided by Campus - installed by Contractor (1) required.
6. Swing Door Operator: LCN 4600 with stop arm on RHR leaf provided by Campus - installed by Contractor (1) required.
7. Operating Trim: Provided by Door Manufacturer.

   a. Pull – Active Leaf: Night Latch (1) required.
   b. Pull: -Inactive Leaf: Dummy Trim (1) required.

8. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (1) required, provided by Campus, installed by Contractor.
9. Metal Door Protection: BHMA A156.16 - (2) required: push side, 8 inches high.
10. Weatherstripping: Head, jambs, meeting stile and sill. Supplied by Door Manufacturer.
11. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Doors always open from interior by use of exit devices. Active leaf is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate remote dogging with building access control system. Door is Fail Secure.

K. Hardware Set 20: (Pair Doors LG-8)

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, exterior lock cylinder hardware, night latch function. RHR leaf.
   Provided by Campus - installed by Contractor (1) required.

5. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin – 99 Series with Electric Latch Retraction dummy trim. Emergency Only. Provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Provided by Door Manufacturer.

    a. Pull – Active Leaf: Night Latch (1) required.
    b. Pull: - Inactive Leaf: Dummy Trim (1) required.

7. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (2) required, provided by Campus, installed by Contractor.
8. Metal Door Protection: BHMA A156.16 - (2) required: push side, 8 inches high.
9. Weatherstripping: Head, jambs, meeting stile and sill. Supplied by Door Manufacturer.
10. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Doors always open from interior by use of exit devices. Active leaf is locked and unlocked from exterior by use of keyed cylinder. Door status reported by use of electronic hinge connected to security system. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate remote dogging with building access control system. Door is Fail Secure.

L. Hardware Set 23: (Single Doors LI-1F, and LI-9):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Operating Trim: Provided by Door Manufacturer.

    a. Pull: Night Latch (1) required.

6.
7. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (1) required, provided by Campus, installed by Contractor.
8. Metal Door Protection BHMA A156.16 push side, 8 inches high. (1) required.
9. Weatherstripping: Head, jamb and sill. Provided by Door Manufacturer.
10. Threshold: Full saddle design – 5 inches (127 mm) wide. 1/2 inch (12 mm) high. Provided by Door Manufacturer.

Theory of Operation: Door always open from interior by use of exit device. Door is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Coordinate door operator and remote dogging with building access control system. Door is Fail Secure.

M. Hardware Set 25: (Pair Doors LI-6)

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, exterior lock cylinder hardware, night latch function. RHR leaf.
   Provided by Campus - installed by Contractor (1) required.
5. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, dummy trim. Emergency Only. Provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Provided by Door Manufacturer.

   a. Pull – Active Leaf: Night Latch (1) required.
   b. Pull: - Inactive Leaf: Dummy Trim (1) required.

7.
8. Swing Door Operator: LCN 4600 with stop arm provided by Campus - installed by Contractor (1) required, RHR
9. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (1) required, provided by Campus, installed by Contractor.
10. Metal Door Protection: BHMA A156.16 - (2) required: push side, 8 inches high.
11. Weatherstripping: Head, jambs, meeting stile and sill. Supplied by Door Manufacturer.
12. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Doors always open from interior by use of exit devices. Active leaf is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate door operator and remote dogging with building access control system. Door is Fail Secure.

N. Hardware Set 26: (Pair Doors LI-1A, LI-1B, LI-6A, LI-6B, LI-7C, LI-7D, UU-1A and UU-1B)

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, exterior lock cylinder hardware, night latch function. RHR leaf.
   Provided by Campus - installed by Contractor (1) required.
5. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, dummy trim. Emergency Only. Provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Provided by Door Manufacturer.

   a. Pulls – Active Leaf: Night Latch Trim (1) required.

b. Pulls – Inactive Leaf: Dummy Trim (1) required.

7. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (2) required, provided by Campus, installed by Contractor.
8. Metal Door Protection: BHMA A156.16 - (2) required: push side, 8 inches high.
9. Weatherstripping: Head, jambs, meeting stile and sill. Supplied by Door Manufacturer.
10. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Doors always open from interior by use of exit devices. Active leaf is locked and unlocked from exterior by use of keyed cylinder. Door status reported by use of electronic hinge connected to security system. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate door operator and remote dogging with building access control system. Door is Fail Secure.

O. Hardware Set 27: (Pair Doors LI-4 and LI-5)

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, exterior lock cylinder hardware, night latch function. RHR leaf.
   Provided by Campus - installed by Contractor (1) required.
5. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 Series with Electric Latch Retraction, dummy trim. Emergency Only. Provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Provided by Door Manufacturer.

   a. Pulls – Active Leaf: Night Latch Trim (1) required.
   b. Pulls – Inactive Leaf: Dummy Trim (1) required.

7. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (2) required, provided by Campus, installed by Contractor.
8. Metal Door Protection: BHMA A156.16 - (2) required: push side, 8 inches high.
9. Weatherstripping: Head, jambs, meeting stile and sill. Supplied by Door Manufacturer.
10. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Egress Only. Doors always open from interior by use of exit devices. Active leaf is locked and unlocked from exterior by use of keyed cylinder. Door status reported by use of electronic hinge connected to security system. Coordinate door operator and remote dogging with building access control system. Door is Fail Secure.

P. Hardware Set 28: (Pair Doors LI-7E)

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.

4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin –QEL99 with Electric Latch Retraction, exterior lock cylinder hardware, storeroom function. RHR leaf. Provided by Campus - installed by Contractor (1) required.
5. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction storeroom function. Emergency Only. Provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Provided by Door Manufacturer.

    a. Pull – Active Leaf: Night Latch (1) required.
    b. Pull: -Inactive Leaf: Dummy Trim (1) required.

7. Swing Door Operator LCN 4600 with stop arm provided by Campus - installed by Contractor (1) required, RHR.
8. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting LHR leaf. (1) required, provided by Campus, installed by Contractor.
9. Metal Door Protection: BHMA A156.16 - (1) required: push side, 8 inches high.
10. Weatherstripping: Head, jambs, meeting stile and sill. Supplied by Door Manufacturer.
11. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Doors always open from interior by use of exit devices. Active leaf is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate door operator and remote dogging with building access control system. Door is Fail Secure

Q. Hardware Set 29: (Single Door UU-4):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Operating Trim: Provided by Door Manufacturer.

    a. Pull: Night Latch (1) required.

6. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (1) required, provided by Campus, installed by Contractor.
7. Metal Door Protection BHMA A156.16 push side, 8 inches high. (1) required.
8. Weatherstripping: Head, jambs and sill. Provided by door manufacturer.
9. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Door always open from interior by use of exit device. Door status reported by use of electronic hinge connected to security system. Door is unlatched and relatched from

exterior by security system remotely for day/night functioning. Coordinate remote dogging with building access control system. Door is Fail Secure.

Note: Some Hardware Set numbers have been skipped on purpose to clarify who provides which items. See Section 08 71 00 “Door hardware” for complete list of hardware sets. Coordinate the work of this section with Section 08 11 16 “Interior Aluminum Doors and Frames” and Section 08 71 00 “"Door Hardware”.

END OF SECTION 08 41 13

SECTION 08 44 13 - GLAZED ALUMINUM CURTAIN WALLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Glazed aluminum curtain wall systems:

1. Conventionally glazed.

B. Related Requirements:

1. Section 07 84 43 "Joint Firestopping" perimeter fire-containment systems field installed with glazed aluminum curtain walls.
2. Section 07 92 00 "Joint Sealants" for installation of joint sealants installed with glazed aluminum curtain walls and for sealants to the extent not specified in this Section.
3. Section 08 80 00 "Glazing" for curtain wall glazing.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For glazed aluminum curtain walls. Include plans, elevations, sections, full-size details, and attachments to other work.

1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
2. Include full-size isometric details of each type of vertical-to-horizontal intersection of glazed aluminum curtain walls, showing the following:

a. Joinery, including concealed welds.
b. Anchorage.
c. Expansion provisions.
d. Glazing.
e. Flashing and drainage.

3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.

C. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

D. Delegated Design Submittal: For glazed aluminum curtain walls, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Include design of all anchors back to building structure/support.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data:

1. For Installer and laboratory and field testing agency.
2. For professional engineer's experience with providing delegated design engineering services of the kind indicated, including documentation that engineer is licensed in New York State.

B. Energy Performance Certificates: For glazed aluminum curtain walls, accessories, and components from manufacturer.

1. Basis for Certification: NFRC-certified energy performance values for each glazed aluminum curtain wall.

C. Product Test Reports: For glazed aluminum curtain walls, for tests performed by manufacturer and witnessed by a qualified testing agency.

D. Quality-Control Program: Developed specifically for Project, including fabrication and installation, in accordance with recommendations in ASTM C1401. Include periodic quality-control reports.

E. Source Quality-Control Reports.

F. Field Quality-Control Reports.

G. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For glazed aluminum curtain walls to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Testing Agency Qualifications: Qualified in accordance with ASTM E699 for testing indicated and accredited by IAS or ILAC Mutual Recognition Arrangement as complying with ISO/IEC 17025 and acceptable to Owner and Architect.

C. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.

1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.7 WARRANTY

A. Special Assembly Warranty: Manufacturer agrees to repair or replace components of glazed aluminum curtain wall that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including, but not limited to, excessive deflection.
b. Noise or vibration created by wind and thermal and structural movements.
c. Deterioration of metals**,** metal finishes**,** and other materials beyond normal weathering.
d. Water penetration through fixed glazing and framing areas.
e. Failure of operating components.

2. Warranty Period: 10 years from date of Substantial Completion.

B. Special Finish Warranty, Factory-Applied Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of baked enamel, powder coat, or organic finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Warranty Period: 10 years from date of Substantial Completion.

C. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
c. Cracking, peeling, or chipping.

2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Aluminum Doors and Frames manufactured by: Apogee Architectural Metals, EFCO, 7800 International Dr., Wausau, Wisconsin 54401, 877 752 3432; inf@apogeearchmetals.com; apogeearchmetals.com and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed or comparable products manufactured by the following, provided products are in compliance with the performance criteria:

1. Kawneer Company, Inc., 555 Guthridge Court, Norcross, GA 30092-3503, 770 449 5555, NationalAccounts@arconic.com; kawneer.com.
2. Or other comparable Manufacturer’s products.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 35 73 "Delegated Design," to design glazed aluminum curtain walls.

B. General Performance: Comply with performance requirements specified, as determined by testing glazed aluminum curtain walls representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Glazed aluminum curtain walls shall withstand movements of supporting structure, including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:

a. Thermal stresses transferring to building structure.
b. Glass breakage.
c. Noise or vibration created by wind and thermal and structural movements.

d. Loosening or weakening of fasteners, attachments, and other components.
e. Failure of operating units.

C. Structural Loads:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.

D. Deflection of Framing Members Supporting Glass: At design wind load, as follows:

1. Deflection Normal to Wall Plane: Limited to 1/175 of length of span of the framing member for lengths of up to 13 feet 6 inches (4.1 m) and to 1/240 of length of span of the framing member plus 1/4 inch (6.35 mm) for lengths of greater than 13 feet 6 inches (4.1 m).
2. Deflection Parallel to Glazing Plane: Limited to 1/360 of clear span or 1/8 inch (3.2 mm), whichever is smaller.

E. Structural: Test in accordance with ASTM E330/E330M as follows:

1. When tested at positive and negative wind-load design pressures, assemblies do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not less than 10 seconds.

F. Water Penetration under Static Pressure: Test in accordance with ASTM E331 as follows:

1. No evidence of water penetration through fixed glazing and framing areas when tested in accordance with a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 15 lbf/sq. ft. (720 Pa).
2. Maximum Water Leakage: No uncontrolled water penetrating assemblies or water appearing on assemblies' normally exposed interior surfaces from sources other than condensation. Water leakage does not include water controlled by flashing and gutters or water that is drained to exterior.

G. Energy Performance: Certified and labelled by manufacturer for energy performance as follows:

1. Thermal Transmittance (U-factor):

a. Fixed Glazing and Framing Areas: U-factor for the system of not more than 0.36 Btu/sq. ft. x h x deg F as determined in accordance with NFRC 100.

2. Solar Heat Gain Coefficient (SHGC):

a. Fixed Glazing and Framing Areas: SHGC for the system of not more than 0.40 as determined in accordance with NFRC 200.

3. Air Leakage:

a. Fixed Glazing and Framing Areas: Air leakage for the system of not more than 0.06 cfm/sq. ft. (0.30 L/s per sq. m) at a static-air-pressure differential of 6.24 lbf/sq. ft. (300 Pa) when tested in accordance with ASTM E283.

4. Condensation Resistance Factor (CRF):

a. Fixed Glazing and Framing Areas: CRF for the system of not less than **60** as determined in accordance with AAMA 1503.

H. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes:

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
2. Thermal Cycling: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested in accordance with AAMA 501.5.

a. High Exterior Ambient-Air Temperature: That which produces an exterior metal-surface temperature of 180 deg F (82 deg C).
b. Low Exterior Ambient-Air Temperature: 0 deg F (minus 18 deg C).

2.3 SOURCE LIMITATIONS

A. Obtain all components of curtain-wall system and storefront system, including framing spandrel panels framing and accessories, from single manufacturer.

B. Basis-of-Design Products: Subject to compliance with requirements, provide the following:

1. 5600 X-Therm Curtain Wall System by Apogee Architectural Metals Main Office: EFCO, 7800 International Dr., Wausau, Wisconsin 54401, 877 752 3432; inf@apogeearchmetals.com.

2.4 GLAZED ALUMINUM CURTAIN WALL SYSTEMS

A. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Construction: Thermally broken.
2. Glazing System: Retained mechanically with gaskets on four sides.
3. Mullion Dimensions as indicated on Drawings
4. Glazing Plane Match Existing.
5. Finish: to match each respective existing finish per building.

a. High-performance organic finish
b. Clear anodic finish
c. Color anodic finish

6. System: Stick-Buit on site.
7. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
8. Steel Reinforcement: As required by manufacturer.

B. Pressure Caps: Manufacturer's standard aluminum components that mechanically retain glazing.

1. Include snap-on aluminum trim that conceals fasteners.

C. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

D. Insulating Spandrel Glass:

1. Comply with Section 08 80 00 “Glazing.”.

E. Entrance Door Systems: Comply with Section 084113 "Aluminum-Framed Entrances and Storefronts".

2.5 GLAZING

A. Glazing: Comply with Section 08 80 00 "Glazing."

B. Glazing Gaskets: ASTM C509 or ASTM C864. Manufacturer's standard.

1. Color: Black.

C. Glazing Sealants: As recommended by manufacturer.

2.6 MATERIALS

A. Sheet and Plate: ASTM B209 (ASTM B209M).

B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221 (ASTM B221M).

C. Structural Profiles: ASTM B308/B308M.

D. Steel Reinforcement:

1. Structural Shapes, Plates, and Bars: ASTM A36/A36M.
2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.
3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.

E. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods in accordance with recommendations in SSPC-SP COM, and prepare surfaces in accordance with applicable SSPC standard.

2.7 ACCESSORIES

A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.

B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch (25.4 mm) that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.

1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A123/A123M or ASTM A153/A153M requirements.

C. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

D. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil thickness per coat.

2.8 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Physical and thermal isolation of glazing from framing members.
4. Accommodation for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
5. Provisions for field replacement of glazing from exterior.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Fabricate components to resist water penetration using either of the following designs:

1. Internal guttering system or other means to drain water passing joints, condensation occurring within framing members, and moisture migrating within glazed aluminum curtain wall to exterior.
2. Pressure-equalized system or double barrier design with primary air and vapor barrier at interior side of glazed aluminum curtain wall and secondary seal weeped and vented to exterior.

E. Curtain-Wall Framing: Fabricate components for assembly using manufacturer's standard assembly method.

F. Factory-Assembled Frame Units:

1. Rigidly secure nonmovement joints.
2. Prepare surfaces that are in contact with structural sealant in accordance with sealant manufacturer's written instructions, to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.
3. Seal joints watertight unless otherwise indicated.
4. Install glazing to comply with requirements in Section 088000 "Glazing."

G. After fabrication, mark components to identify their locations in Project in accordance with Shop Drawings.

2.9 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker. Match each respective existing building finishes.

B. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker Match each respective existing building finishes..

1. Color: As selected by Architect from full range of industry colors and color densities.

C. High-Performance Organic Finish, Two-Coat PVDF: Fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat.

1. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Color and Gloss: As selected by Architect from manufacturer's full range to match existing color and gloss per each respective existing building finishes.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's written instructions.

B. Do not install damaged components.

C. Fit joints to produce hairline joints free of burrs and distortion.

D. Rigidly secure nonmovement joints.

E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.

F. Where welding is required, weld components in concealed locations to minimize distortion or discoloration of finish. Protect glazing surfaces from welding.

G. Seal joints watertight unless otherwise indicated.

H. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with primer, applying sealant or tape, or installing nonconductive spacers as recommended by manufacturer for this purpose.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

I. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within glazed aluminum curtain wall to exterior.

J. Install components plumb and true in alignment with established lines and grades.

3.3 GLAZED ALUMINUM CURTAIN WALL SYSTEMS INSTALLATION

A. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

3.4 GLAZING INSTALLATION

A. Install glazing as specified in Section 088000 "Glazing."

3.5 WEATHERSEAL SEALANT INSTALLATION

A. Install weather seal sealant to completely fill cavity, in accordance with sealant manufacturer's written instructions, to produce weatherproof joints.

3.6 ERECTION TOLERANCES

A. Install glazed aluminum curtain walls to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet (3.2 mm in 3 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
2. Level: 1/8 inch in 20 feet (3.2 mm in 6 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
3. Alignment:

    a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch (12.7 mm) wide, limit offset from true alignment to 1/16 inch (1.6 mm).
    b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch (12.7 to 25.4 mm) wide, limit offset from true alignment to 1/8 inch (3.2 mm).
    c. Where surfaces are separated by reveal or protruding element of 1 inch (25.4 mm) wide or more, limit offset from true alignment to 1/4 inch (6 mm).

4. Location: Limit variation from plane to 1/8 inch in 12 feet (3.2 mm in 3.6 m); 1/2 inch (12.7 mm) over total length.

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Test Area: Perform tests on one bay at least 30 feet, by one story.

C. Field Quality-Control Testing: Perform the following test on representative areas of glazed aluminum curtain walls.

1. Water-Spray Test: Before installation of interior finishes has begun, areas designated by Architect shall be tested in accordance with AAMA 501.2 and shall not evidence water penetration.

    a. Perform a minimum of two tests in areas as directed by Architect.

D. Glazed aluminum curtain walls will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

END OF SECTION 08 44 13

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Mechanical door hardware for the following:

a. Swinging doors.

B. Related Requirements:

1. Section 081113 "Hollow Metal Doors and Frames" and for door silencers provided as part of hollow-metal frames.
2. Section 083113 "Access Doors and Frames" for access door hardware, except cylinders.
3. Section 084113 "Aluminum-Framed Entrances and Storefronts" for door hardware except as noted.
4. Section 084413 “Glazed Aluminum Curtain Walls” for curtain wall assemblies.

C. Retain subparagraphs below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.

1.2 COORDINATION

A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

B. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.

C. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

D. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field-verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Conference participants shall include door and frame installers and hardware supplier.

B. Keying Conference: Conduct conference at Project site.
1. Conference participants shall include hardware supplier and Owner representative.
2. Incorporate conference decisions into keying schedule after reviewing door hardware keying system, including, but not limited to, the following:

a. Flow of traffic and degree of security required.
b. Preliminary key system schematic diagram.
c. Requirements for key control system.
d. Requirements for access control.
e. Address for delivery of keys.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: for Swing Door Operators:
1. Include plans, elevations, sections, hardware mounting heights, and attachment details.
2. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include diagrams for power, signal, and control wiring.
4. Indicate locations of activation and safety devices.
5. Include hardware schedule and indicate hardware types, functions, quantities, and locations.
6. Coordinate with Campus-provided items.

C. Samples for Verification: For each type of exposed product, in each finish specified.

1. Sample Size: Full-size units or minimum 2-by-4-inch (51-by-102-mm) Samples for sheet and 4-inch (102-mm) long Samples for other products.
a. Full-size Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.

D. Door Hardware Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant. Coordinate door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.

2. Format: Use same scheduling sequence and format and use same door numbers as in door hardware schedule in the Contract Documents.
3. Content: Include the following information:
    a. Identification number, location, hand, fire rating, size and material of each door and frame.
    b. Locations of each door hardware set cross-referenced to Drawings on floor plans and to door and frame schedule.
    c. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
    d. Description of electrified door hardware sequences of operation.
    e. Fastenings and other installation information.
    f. Explanation of abbreviations, symbols and designations contained in door hardware schedule.
    g. Mounting locations for door hardware.

E. Keying Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For compliance with accessibility requirements, for tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.

C. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of door hardware to include in maintenance manuals.

B. Schedules: Final door hardware and keying schedule.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor, Architect, and Owner about door hardware and keying.

1. Warehousing Facilities: In Project's vicinity.
2. Scheduling Responsibility: Preparation of door hardware and keying schedule.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lockup for door hardware delivered to Project site.

B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

C. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including excessive deflection, cracking, or breakage.
b. Faulty operation of doors and door hardware.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:

a. Exit Devices: Two years from date of Substantial Completion.
b. Manual Closers: 10 years from date of Substantial Completion.
c. Swing Door Operators: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain each type of door hardware from single manufacturer.

1. Provide electrified door hardware from same manufacturer as mechanical door hardware unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Door Assemblies: Where fire-rated doors are indicated, provide door hardware complying with NFPA 80 that is listed and labeled by a qualified testing agency, for fire-

protection ratings indicated, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.

B. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Power-Operated Door Standard: BHMA A156.10.

D. Means of Egress Doors: Latches do not require more than 15 lbf (67 N) to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

E. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the USDOJ's "2010 ADA Standards for Accessible Design" ICC A117.1.

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22.2 N).
2. Comply with the following maximum opening-force requirements:

    a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
    b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.
4. Adjust door closer sweep periods so that, from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch.
5. Adjust spring hinges so that, from an open position of 70 degrees, the door will take at least 1.5 seconds to move to the closed position.

F. Swing Door Operator Opening Force:
1. Not more than 30 lbf (133 N) required to manually open door if power fails.
2. Accessible, Power-Assist Interior Doors: Not more than 5 lbf (22 N) to push or pull door to fully open position.

2.3 HINGES

A. Hinges: BHMA A156.1.

1. Campus will provide:

    a. Best HD
    b. Electrified Hinges: Best HD Elec w/ Monitor

2.4 JUNCTION BOX

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. Dormakaba (BEST).
   2. ASSA ABLOY (Securitron / HES).
   3. Allegion (Von Duprin / Schlage).

B. Provide junction boxes (mortar boxes) inside the door frames for electric hinges. Provide junction boxes adjacent to opening if needed.

C. Description: Provide factory-welded or attached steel back boxes (mortar boxes) integrated directly behind frame cutouts for electrified door hardware prep locations. Junction boxes shall enclose the frame cavity to protect electrical components and connections from plaster and debris.

D. Construction and features:

   1. Material: Minimum 18-gauge (1.2 mm) galvanized or galvannealed steel, fully integrated with the steel frame structure in compliance with ANSI/SDI A250.6 and ANSI/SDI A250.8.
   2. Conduit Knockouts: Provide integrated top and bottom knockouts or threaded conduit hubs (minimum 1/2-inch / 13 mm diameter) to accept field conduit raceways routing low-voltage power and signal wiring into the frame cavity.
   3. Accessibility: Enclosures must provide adequate interior clearance to house Molex-style quick-connect wire harnesses, terminal blocks, or field splices without crowding.

E. Standards and Compliance: Comply with SDI-130 (Electrified Hinge Preparations) and standard NFPA 70 (NEC) guidelines for low-voltage wire containment inside structural door assemblies.

2.5 MECHANICAL LOCKS AND LATCHES

A. Lock Functions: As indicated in door hardware schedule.

B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

C. Lock Backset: 2-3/4 inches (70 mm).

D. Lock Trim:

   1. Description: ADA compliant, tapered design without return.
   2. Levers: Cast.

      a. Avalon design as manufactured by basis of design manufacturer.

   3. Escutcheons (Roses): Wrought.

E. Strikes: Provide manufacturer's standard strike for each lock bolt or latch bolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.

1. Flat-Lip Strikes: For locks with three-piece antifriction latch bolts, as recommended by manufacturer.

F. Mortise Locks: ANSI/BHMA A156.13, Operational Grade 1 Security Grade 1; stamped steel case with steel or brass parts; Series 1000.

1. Escutcheons: not less than 7 by 2-1/4 inch with a bushing at least 1/4 inch long.

a. Cut escutcheons to fit cylinders.

2. Trim: Straight, beveled, or rounded sides, corners, and edges.

3. Levers and Roses:

a. Provide with screwless shanks and no exposed screws.
b. Finish: Match finish of existing hardware for each building.

2.6 ELECTRIC STRIKES

A. Electric Strikes: ANSI/BHMA A156.31, Grade 1; with faceplate to suit lock and frame.

2.7 SURFACE BOLTS

A. Surface Bolts: ANSI/BHMA A156.16.

2.8 MANUAL BOLTS

A. Manual Bolts: ANSI/BHMA A156.16; minimum 3/4-inch (19-mm) throw; designed for mortising into door edge.

2.9 AUTOMATIC AND SELF-LATCHING BOLTS

A. Automatic Bolts: ANSI/BHMA A156.3, Type 25; minimum 3/4-inch (19-mm) throw; with dust-proof strikes; designed for mortising into door edge. Include wear plates.

B. Self-Latching Bolts: ANSI/BHMA A156.3, Type 27; minimum 3/4-inch (19-mm) throw; with dust-proof strikes; designed for mortising into door edge.

2.10 EXIT DEVICES AND AUXILIARY ITEMS

A. Exit Devices and Auxiliary Items: ANSI/BHMA A156.3.

1. Rim Exit Devices: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor.
2. Surface Vertical Rod Exit Devices: Von Duprin QEL99 with Electric Latch Retention and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor.
3. Provide electronic functions as indicated in Door Hardware Schedule.

2.11 LOCK CYLINDERS

A. Lock Cylinders: Tumbler type, constructed from brass. Provide cylinder from same manufacturer of locking devices.

B. Standard Lock Cylinders: ANSI/BHMA A156.5, Grade 1 permanent cores; face finished to match lockset.

C. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

2.12 Cylinders and cores with seven pin tumblers. Provide Best 1C7 small format interchangeable type cylinders and cores. Provide cores (SFIC) that are removable by special control keys.

A. Permeant cores shall be campus-furnished and Contractor installed.

2.13 KEYING

A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, appendix. Provide one extra key blank for each lock. Incorporate decisions made in keying conference.

1. Master Key System: Change keys and a master key operate cylinders.

a. Provide three cylinder change keys and five master keys.

2. Keyed Alike: Key all cylinders to same change key.

B. Keys: Brass.

1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:

a. Notation: Information to be furnished by Owner.

2.14 KEY CONTROL SYSTEM

A. Key Control Cabinet: BHMA A156.28; metal cabinet with baked-enamel finish; containing key-holding hooks, labels, two sets of key tags with self-locking key holders, key-gathering envelopes and temporary and permanent markers; with key capacity of 150 percent of the number of locks.
   1. Wall-Mounted Cabinet: Grade 1 cabinet with hinged-panel door equipped with key-holding panels and pin-tumbler cylinder door lock.

B. Key Lock Boxes: Designed for storage of two keys.

2.15 OPERATING TRIM

A. Hollow Metal Doors:
   1. Basis-of-Design Product: Subject to compliance with requirements, provide Von Duprin or a comparable product by one of the following available manufacturers. Operating trim shall be compatible with Von Duprin exit devices:
      a. Schlage
      b. Corbin Russwin
      c. Sargent
      d. Accentra

   2. Operating Trim: BHMA A156.6; Type 304 stainless steel.

   3. Pulls (Von Duprin 990DT – Dummy Trim and, 990NL – Night Latch):

      a. Escutcheon Size: 3" x 14-13/16" x 3/32"
      b. Pulls Center to Center: 5-1/2"
      c. Projection: 2"
      d. Corners: Rounded.

   4. Push Plates: (Von Duprin 990EO Exit Only):

      a. Escutcheon Size: 3" x 14-13/16" x 3/32"
      b. Corners: Rounded.

B. Aluminum Doors: Provided by Door Manufacturer under Section 084113 Aluminum Framed Entrances and Storefronts.

2.16 ACCESSORIES FOR PAIRS OF DOORS

A. Coordinators: ANSI/BHMA A156.3; consisting of active-leaf, hold-open lever, and inactive-leaf release trigger; fabricated from steel with nylon-coated strike plates; with built-in, adjustable safety release.

B. Astragals: ANSI/BHMA A156.22.

2.17 SURFACE CLOSERS

A. Surface Closers: ANSI/BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

B. Campus will provide: LCN 4040XP.

C. Configuration: Provide closer designs as follows:

1. Typical Application: Parallel arm closers for push side mounting, unless noted otherwise.
2. Standard arm closers for pull side mounting as indicated in Hardware Schedule.

D. Finish: Provide painted aluminum finish for all exposed components.

1. Color: Aluminum.

2.18 THRESHOLDS

A. Thresholds: ANSI/BHMA A156.21; fabricated to full width of opening indicated.

2.19 METAL PROTECTIVE TRIM UNITS

A. Metal Protective Trim Units: ANSI/BHMA A156.6; fabricated from 0.050-inch- (1.3-mm-) thick Stainless Steel with manufacturer's standard machine or self-tapping screw fasteners.

2.20 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rating labels and as otherwise approved by Architect.

1. Manufacturer's identification is permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and ANSI/BHMA A156.18.

C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended; however, aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
2. Fire-Rated Applications:

    a. Wood or Machine Screws: For the following:

        1) Hinges mortised to doors or frames.
        2) Strike plates to frames.
        3) Closers to doors and frames.

    b. Steel Through Bolts: For the following unless door blocking is provided:

        1) Surface hinges to doors.
        2) Closers to doors and frames.
        3) Surface exit devices.

3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
4. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.21 FINISHES

A. Provide finishes complying with ANSI/BHMA A156.18 as indicated in door hardware schedule.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance of the Work.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Steel Doors and Frames: For surface-applied door hardware, drill and tap doors and frames in accordance with ANSI/SDI A250.6.

B. Wood Doors: Comply with door and hardware manufacturers' written instructions.

3.3 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.

B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches (760 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided. Replace construction cores with permanent cores as directed by Owner.

C. Electrified Door Hardware Installation:
1. Install electrified door hardware and low-voltage connections in compliance with NFPA 70 (NEC) and manufacturer’s written wiring diagrams.
2. Junction Boxes:
    a. Install junction boxes inside the door frames for electric hinges. Install junction boxes adjacent to openings if needed.
3. Wiring and Connections:
    a. Run low-voltage wiring in continuous lengths from junction box or power supply through door frame, power transfer hinges/loops, and door leaf to hardware component.
    b. Provide standardized plug-in connectors or terminal blocks as specified. Wire nuts are not acceptable for electrified hardware field terminations unless explicitly authorized by hardware manufacturer.

c. Conceal all low-voltage wiring inside door leaves, hollow metal frame cavities, or conduit raceways.

4. Coordination: Coordinate with Division 26 (Electrical) for rough-in of 120V AC primary power supply to hardware power supply enclosures, and Division 28 (Electronic Safety and Security) for field integration with access control and fire alarm systems.

D. Adjustment and Testing:
1. Adjust door control devices, latching hardware, and electrified components to operate smoothly, quietly, and free of binding.
2. Test electrified door hardware units to verify proper functional operation, power supply interface, fail-safe/fail-secure operation, and integration with life safety release signals prior to Substantial Completion.

E. Door Operators: Connect door operators to electrical power distribution system.

F. Permanent core shall be campus-furnished and Contractor installed.

G. Key Control System:

1. Key Lock Boxes: Install where indicated or approved by Architect to provide controlled access for fire and medical emergency personnel.
Retain "Boxed Power Supplies" Paragraph below if electrified door hardware is required. Verify, with authorities having jurisdiction, acceptable location for power supplies.

H. Boxed Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings in equipment room. Verify location with Architect.

1. Configuration: Provide least number of power supplies required to adequately serve doors with electrified door hardware.

I. Swing Door Operators; General:

1. Install swing door operators in accordance with manufacturer's written instructions and cited BHMA A156.10 for direction of pedestrian travel, including signage, controls, wiring, and connection to the building's power supply.
2. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure nonmovement joints. Seal joints watertight.
3. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
4. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous coating.
5. Entrances: Install Swing Door Operators plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.
6. Install surface-mounted hardware using concealed fasteners to greatest extent possible.
7. Set headers, operating brackets, and guides level and true to location with anchorage for permanent support.
8. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within system to exterior.

9. Connect door operators to electrical power distribution system.

J. Access-Control Devices: Connect access-control devices to access-control system as specified in Section 281300 "Access Control Software and Database Management."

K. Controls: Install and adjust activation and safety devices in accordance with manufacturer's written instructions and cited BHMA standard for direction of pedestrian travel. Connect control wiring in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

L. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."

M. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.

N. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

1. Do not notch perimeter gasketing to install other surface-applied hardware.

O. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

P. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.4 FIELD QUALITY CONTROL

A. Independent Architectural Hardware Consultant: Owner will engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.

1. Independent Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
2. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 70 degrees and so that closing time complies with accessibility requirements of authorities having jurisdiction.
3. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.

B. Occupancy Adjustment: Approximately six months after installation of individual door, door location, or three months after date of Substantial Completion, Installer's Architectural Hardware Consultant is to examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.6 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.7 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

3.8 DOOR HARDWARE SCHEDULE – ALUMINUM AND HM ENTRIES

A. Hardware Set 1: (Single Doors AD-1, AD-3, UU-7C, UU-8C, UU-12 and UU-13):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Swing Door Operator: LCN 4600 with stop arm provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Night Latch Provided by Door Manufacturer.
7. Metal Door Protection BHMA A156.16 (1) required: push side, 8 inches high.
8. Weatherstripping: Supplied by Door Manufacturer.
9. Threshold: Head, jambs and sill. Supplied by Door Manufacturer.

Theory of Operation: Door always open from interior by use of exit device. Door is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door can be opened by push plates that activate swing door operator that is coordinated with access control. (These exterior doors work in sequential operation. The exterior and interior swing door openers are linked to provide hands-free passage through both doors after only a single pressing of one push plate, coordinated with the access control device.) Door is unlatched and relatched from exterior by security system remotely for day/night functioning.

Coordinate door operator and remote dogging with building access control system. Door is Fail Secure.

B. Hardware Set 2: (Single Doors AD-1A, AD-1B, UU-1C, UU-6A, UU-6B, UU-7, UU-7A, UU-7B, UU-8, UU-8A, UU-8B, UU-12A, UU-12B, UU-12C, UU-13A, UU-13B and UU-13C):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Operating Trim: Provided by Door Manufacturer:

    a. Pull: Dummy Trim (1) required

6. Surface Closer: BHMA A156.4, LCN 4040XP with stop function - push side mounting. (1) required, provided by Campus, installed by Contractor.
7. Metal Door Protection BHMA A156.16 push side, 8 inches high. (1) required.
8. Weatherstripping: Supplied by Door Manufacturer.
9. Threshold: Head, jambs and sill. Supplied by Door Manufacturer.

Theory of Operation: Door always unlatched from interior by use of exit device. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Door status reported by use of electronic hinge connected to security system. Coordinate remote dogging with building access control system. Door is Fail Secure.

C. Hardware Set 3: (Single Doors AD-1C, AD-3A, UU-1G, UU-6C, UU-7G, UU-8G, UU-12D and UU-13D):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Door Trim: Provided by Door Manufacturer:

    a. Pull: Dummy Trim (1) required.
    b. Push: Exit Only (1) required.

5. Swing Door Operator: LCN 4600 with stop arm provided by Campus - installed by Contractor (1) required.
6. Surface Closer: BHMA A156.4, LCN 4040XP with stop function - push side mounting. (1) required, provided by Campus, installed by Contractor.
7. Metal Door Protection BHMA A156.16 push side, 8 inches high.

Theory of Operation: Door always open from both sides by use of pulls or push plates. Door can be opened by push plates that activate swing door operator. (These interior doors work in sequential operation, the exterior and interior swing door openers are linked to provide hands-

free passage through both doors after only a single pressing of one push plate, coordinated with the access control device.)

D. Hardware Set 4: (Single Doors AD-1D, AD-1E, UU-1D, UU-6D, UU-6E, UU-7D, UU-7E, UU-7F, UU-8D, UU-8E, UU-8F, UU-12E, UU-12F, UU-12G, UU-13E, UU-13F and UU-13G):

1. Butts: Heavy-Duty Hinge - provided by door manufacturer: (4) required.
2. Door Trim: Provided by Door Manufacturer:

    a. Push: Exit Only (1) required.
    b. Pull: Dummy Trim (1) required

3. Surface Closer: BHMA A156.4, LCN 4040XP with stop function - push side mounting. (1) required, provided by Campus, installed by Contractor.
4. Metal Door Protection BHMA A156.16 push side, 8 inches high (1) required.

E. Hardware Set 5: (Single Door LG-1):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Swing Door Operator: LCN 4600 with stop arm provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Provided by Door Manufacturer:

    a. Pull: Night Latch (1) required

7. Metal Door Protection BHMA A156.16 push side, 8 inches high. (1) required.
8. Weatherstripping: Head, jambs and sill. Provided by Door Manufacturer.
9. Threshold: Provided by Door Manufacturer.

Theory of Operation: Door always open from interior by use of exit device. Door is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door can be opened by push plates that activate swing door operator that is coordinated with access control. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate door operator and remote dogging with building access control system. Provide for the separation of dissimilar metals. Door is Fail Secure.

F. Hardware Set 6: (Single Door UU-1):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.

3. Junction Box: (1) required.
4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Swing Door Operator: LCN 4600 with stop arm provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Night Latch (1) required. Provided by Door Manufacturer
7. Metal Door Protection BHMA A156.16 push side, 8 inches high. (1) required.
8. Weatherstripping: Head, jambs and sill. Provided by Door Manufacturer.
9. Threshold. Provided by Door Manufacturer

Theory of Operation: Door always open from interior by use of exit device. Door is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door can be opened by push plates that activate swing door operator that is coordinated with access control. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate door operator and remote dogging with building access control system. Door is Fail Secure.

G. Hardware Set 7: (Single Door UU-4A):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Swing Door Operator: LCN 4600 with stop arm provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Night Latch Provided by Door Manufacturer.
7. Metal Door Protection BHMA A156.16 (1) required: push side, 8 inches high.
8. Weatherstripping: Head, jambs and sill. Supplied by Door Manufacturer.
9. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Door always open from interior by use of exit device. Door is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door can be opened by push plates that activate swing door operator that is coordinated with access control. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate door operator and remote dogging with building access control system. Door is Fail Secure.

H. Hardware Set 8: (Single Door UU-6):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.

4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Operating Trim: Provided by Door Manufacturer:

    a. Pull: Night Latch (1) required.

6. Surface Closer: BHMA A156.4, LCN 4040XP with stop function - push side mounting. (1) required, provided by Campus, installed by Contractor.
7. Metal Door Protection BHMA A156.16 push side, 8 inches high. (1) required.
8. Weatherstripping: Head, jambs and sill. Supplied by Door Manufacturer.
9. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Door always unlatched from interior by use of exit device. Door is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by Access Control Device provided by Security Contractor. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Door status reported by use of electronic hinge connected to security system. Coordinate remote dogging with building access control system. Door is Fail Secure.

I. Hardware Set 9: (Unequal Leaf HM Doors LG-2):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Swing Door Operator: LCN 4600 with stop arm provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Provided by Door Manufacturer.

    a. Pull – Active Leaf: Night Latch (1) require

7. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – pull-side mounting. (1) required, provided by Campus, installed by Contractor.
8. Manual Flush Bolts: Rockwood 555. (2) required - inactive leaf:
9. Metal Door Protection BHMA A156.16 - (2) required: push side, active leaf, 8 inches high.
10. Astragal (1) each required.
11. Weatherstripping: Head, jambs, meeting stile and sill.
12. Threshold:

Theory of Operation: Door always open from interior by use of exit device. Door is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door can be opened by push plates that activate swing door operator that is coordinated with access control. Door is unlatched and relatched from exterior by security system

remotely for day/night functioning. Coordinate door operator and remote dogging with building access control system. Provide for the separation of dissimilar metals. Door is Fail Secure.

J. Hardware Set 10: (Unequal Leaf Doors LI-2):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Swing Door Operator: LCN 4600 with stop arm on Active Leaf: provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Provided by Door Manufacturer.

    a. Pull - Active Leaf: Night Latch (1) required.
    b. Push - Inactive Leaf: Exit Only. (1) required.

7. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (1) required, provided by Campus, installed by Contractor.
8. Manual Flush Bolts: Rockwood 555. (2) required - inactive leaf:
9. Metal Door Protection BHMA A156.16 - (1) required: push side, active leaf, 8 inches high.
10. Weatherstripping: Head, jambs, meeting stile and sill. Provided by Door Manufacturer.
11. Threshold. Provided by Door Manufacturer.

Theory of Operation: Door always open from interior by use of exit device. Door is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door can be opened by push plates that activate swing door operator that is coordinated with access control. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate door operator and remote dogging with building access control system. Provide for the separation of dissimilar metals. Door is Fail Secure.

K. Hardware Set 11: (Pair HM Doors LG-3):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Mortise Lockset: - storeroom function with lever trim. active leaf (1) required:
5. Manual Flush Bolts: Rockwood 555. (2) required - inactive leaf:
6. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – pull-side mounting. (2) required, provided by Campus, installed by Contractor.
7. Metal Door Protection BHMA A156.16 - (2) required: push side, 8 inches high.
8. Astragal (1) each required.
9. Weatherstripping: Head, jambs, meeting stile and sill.
10. Threshold: 1/2 inch (12 mm) high.

Theory of Operation: Door active leaf always open from interior by use of lever lockset. Door is locked and unlocked from exterior by use of key. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Provide for the separation of dissimilar metals. Door is Fail Secure.

L. Hardware Set 12: (Pair HM Doors LG-4):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (7) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Surface Vertical Rod (upper rod only) Exit Device: Von Duprin – 99 Series with dummy trim. Emergency Only (1) required.
6. Operating Trim:

    a. Pull - Active Leaf: Night Latch (1) required.
    b. Pull -Inactive Leaf: Dummy Trim (1) required.

7. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (2) required, provided by Campus, installed by Contractor.
8. Metal Door Protection BHMA A156.16.(1) required: push side, active leaf, 8 inches high.
9. Weatherstripping: Head, jambs, meeting stile and sill.
10. Threshold: 1/2 inch (12 mm) high.

Theory of Operation: Door active leaf always open from interior by use of exit devices. Door is unlatched from exterior by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door is locked and unlocked from exterior by use of keyed cylinder. Provide for the separation of dissimilar metals. Egress Only. Door is Fail Secure.

M. Hardware Set 13: (Pair HM Doors LG-5):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, exterior lock cylinder hardware, night latch function. RHR leaf. Provided by Campus - installed by Contractor (1) required.
5. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, dummy trim. Emergency Only. Provided by Campus - installed by Contractor (1) required.
6. Swing Door Operator: LCN 4600 with stop arm provided by Campus - installed by Contractor (2) required.
7. Operating Trim:

a. Pull – Active Leaf: Night Latch (1) required.
b. Pull: – Active Leaf: Night Latch (1) required.

8. Metal Door Protection BHMA A156.16.(1) required: push side, active leaf, 8 inches high.
9. Weatherstripping: Head, jambs, meeting stile and sill.
10. Threshold: Latching Panic Style design., 1/2 inch (12 mm) high.

Theory of Operation: Doors always open from interior by use of exit devices. Door is unlatched from exterior by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door is locked and unlocked from exterior by use of keyed cylinder. Provide for the separation of dissimilar metals. Door is Fail Secure.

N. Hardware Set 14: (Pair HM Doors LG-4A):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (8) required.
2. Door Trim:

a. Push: Exit Only. (2) required
b. Pull: Dummy Trim. (2) required

3. Surface Closer: BHMA A156.4, LCN 4040XP with hold-open and stop function - push side mounting (2) required, provided by Campus, installed by Contractor.
4. Metal Door Protection BHMA A156.16 push side, 8 inches high. (2) required

O. Hardware Set 15: (Pair HM Doors LG-5A):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Door Trim:

a. Push: Exit Only. (2) required
b. Pull: Dummy Trim. (2) required

5. Swing Door Operator: LCN 4600 with stop arm provided by Campus - installed by Contractor (2) required.
6. Metal Door Protection BHMA A156.16 push side, 8 inches high. (2) required.

Theory of Operation: Doors always open from interior by use of exit devices. Door is unlatched from exterior by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door is locked and unlocked from exterior by use of keyed cylinder. Provide for the separation of dissimilar metals. Door is Fail Secure.

P. Hardware Set 16: (Pair Doors LG-6 and UU-14.):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.

3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, exterior lock cylinder hardware, night latch function. RHR leaf. Provided by Campus - installed by Contractor (1) required.
5. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, dunny trim. Emergency Only. Provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Provided by Door Manufacturer.

    a. Pull – Active Leaf: Night Latch (1) required.
    b. Pull: -Inactive Leaf: Dummy Trim (1) required.

7. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (2) required, provided by Campus, installed by Contractor.
8. Metal Door Protection BHMA A156.16 - (2) required: push side, active leaf, 8 inches high.
9. Weatherstripping: Head, jambs, meeting stile and sill. Supplied by Door Manufacturer.
10. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Door always open from interior by use of exit devices. Door is unlatched from exterior by access control device provided by Security Contractor. Active leaf is locked and unlocked from exterior by use of keyed cylinder. Door status reported by use of door electronic hinges connected to security system. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate remote dogging with building access control system. Door is Fail Secure.

Q. Hardware Set 17: (Pair Doors LI-1)

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, exterior lock cylinder hardware, night latch function. RHR leaf. Provided by Campus - installed by Contractor (1) required.
5. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, dummy trim. Emergency Only. Provided by Campus - installed by Contractor (1) required.
6. Swing Door Operator: LCN 4600 with stop arm on RHR leaf provided by Campus - installed by Contractor (1) required.
7. Operating Trim: Provided by Door Manufacturer.

    a. Pull – Active Leaf: Night Latch (1) required.
    b. Pull: -Inactive Leaf: Dummy Trim (1) required.

8. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (1) required, provided by Campus, installed by Contractor.
9. Metal Door Protection: BHMA A156.16 - (2) required: push side, 8 inches high.
10. Weatherstripping: Head, jambs, meeting stile and sill. Supplied by Door Manufacturer.
11. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Doors always open from interior by use of exit devices. Active leaf is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. (These exterior doors work in sequential operation. The exterior and interior swing door openers are linked to provide hands-free passage through both doors with only a single pressing of one push plate, coordinated with the access control device.) Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate remote dogging with building access control system. Door is Fail Secure.

R. Hardware Set 18: (Pair Doors LG-7, LG-9 and UU-15)

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, exterior lock cylinder hardware, night latch function. RHR leaf. Provided by Campus - installed by Contractor (1) required.
5. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, dummy trim. Emergency Only. Provided by Campus - installed by Contractor (1) required.
6. Swing Door Operator: LCN 4600 with stop arm on RHR leaf provided by Campus - installed by Contractor (1) required.
7. Operating Trim: Provided by Door Manufacturer.

    a. Pull – Active Leaf: Night Latch (1) required.
    b. Pull: -Inactive Leaf: Dummy Trim (1) required.

8. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (1) required, provided by Campus, installed by Contractor.
9. Metal Door Protection: BHMA A156.16 - (2) required: push side, 8 inches high.
10. Weatherstripping: Head, jambs, meeting stile and sill. Supplied by Door Manufacturer.
11. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Doors always open from interior by use of exit devices. Active leaf is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate remote dogging with building access control system. Door is Fail Secure.

S. Hardware Set 19: Not Used

T. Hardware Set 20: (Pair Doors LG-8)

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.

4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, exterior lock cylinder hardware, night latch function. RHR leaf. Provided by Campus - installed by Contractor (1) required.
5. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin – 99 Series with Electric Latch Retraction dummy trim. Emergency Only. Provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Provided by Door Manufacturer.

    a. Pull – Active Leaf: Night Latch (1) required.
    b. Pull: - Inactive Leaf: Dummy Trim (1) required.

7. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (2) required, provided by Campus, installed by Contractor.
8. Metal Door Protection: BHMA A156.16 - (2) required: push side, 8 inches high.
9. Weatherstripping: Head, jambs, meeting stile and sill. Supplied by Door Manufacturer.
10. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Doors always open from interior by use of exit devices. Active leaf is locked and unlocked from exterior by use of keyed cylinder. Door status reported by use of electronic hinge connected to security system. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate remote dogging with building access control system. Door is Fail Secure.

U. Hardware Set 21: (Pair Doors LG-7A, LG-9A, LI-1C, LI-6C, LI-7B, and UU-15A).

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (7) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Door Trim: Provided by Door Manufacturer.

    a. Pull: Dummy Trim (2) required.
    b. Push: Exit Only. (2) required.

5. Swing Door Operator: LCN 4600 with stop arm on RHR leaf provided by Campus - installed by Contractor (1) required.
6. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (1) required, provided by Campus, installed by Contractor.
7. Metal Door Protection: BHMA A156.16 - (2) required: push side, 8 inches high.

V. Hardware Set 22: (Pair Doors LG-8A, LI-1D, LI-1E, LI-6D, LI-6E, LI-7, LI-7A, UU-1E, UU-1F and U14A)

1. Butts: Heavy-Duty Hinge provide d by Campus – installed by Contractor, (8) required.
2. Door Trim: Provided by Door Manufacturer.

    a. Pulls: Dummy Trim (2) required.
    b. Push: Exit Only (2) required.

3. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (2) required, provided by Campus, installed by Contractor.
4. Metal Door Protection: BHMA A156.16 - (2) required: push side, 8 inches high.

W. Hardware Set 23: (Single Doors LI-1F, and LI-9):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Operating Trim: Provided by Door Manufacturer.

    a. Pull: Night Latch (1) required.
6.
7. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (1) required, provided by Campus, installed by Contractor.
8. Metal Door Protection BHMA A156.16 push side, 8 inches high. (1) required.
9. Weatherstripping: Head, jamb and sill. Provided by Door Manufacturer.
10. Threshold: Full saddle design – 5 inches (127 mm) wide. 1/2 inch (12 mm) high. Provided by Door Manufacturer.

Theory of Operation: Door always open from interior by use of exit device. Door is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Coordinate door operator and remote dogging with building access control system. Door is Fail Secure.

X. Hardware Set 24: (Single HM Door LI-3):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (1) required, provided by Campus, installed by Contractor.
6. Operating Trim: Night Latch.
7. Metal Door Protection BHMA A156.16 push side, 8 inches high. (1) required.
8. Weatherstripping: Head, jamb and sill. Provided by Door Manufacturer.
9. Threshold: Full saddle design – 5 inches (127 mm) wide. 1/2 inch (12 mm) high. Provided by Door Manufacturer.

Theory of Operation: Door always open from interior by use of exit device. Door is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device

provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Coordinate door operator and remote dogging with building access control system. Door is Fail Secure.

Y. Hardware Set 25: (Pair Doors LI-6)

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, exterior lock cylinder hardware, night latch function. RHR leaf. Provided by Campus - installed by Contractor (1) required.
5. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, dummy trim. Emergency Only. Provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Provided by Door Manufacturer.

    a. Pull – Active Leaf: Night Latch (1) required.
    b. Pull: - Inactive Leaf: Dummy Trim (1) required.

7.
8. Swing Door Operator: LCN 4600 with stop arm provided by Campus - installed by Contractor (1) required, RHR
9. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (1) required, provided by Campus, installed by Contractor.
10. Metal Door Protection: BHMA A156.16 - (2) required: push side, 8 inches high.
11. Weatherstripping: Head, jambs, meeting stile and sill. Supplied by Door Manufacturer.
12. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Doors always open from interior by use of exit devices. Active leaf is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate door operator and remote dogging with building access control system. Door is Fail Secure.

Z. Hardware Set 26: (Pair Doors LI-1A, LI-1B, LI-6A, LI-6B, LI-7C, LI-7D, UU-1A and UU-1B)

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, exterior lock cylinder hardware, night latch function. RHR leaf. Provided by Campus - installed by Contractor (1) required.
5. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, dummy trim. Emergency Only. Provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Provided by Door Manufacturer.

a. Pulls – Active Leaf: Night Latch Trim (1) required.
b. Pulls – Inactive Leaf: Dummy Trim (1) required.

7. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (2) required, provided by Campus, installed by Contractor.
8. Metal Door Protection: BHMA A156.16 - (2) required: push side, 8 inches high.
9. Weatherstripping: Head, jambs, meeting stile and sill. Supplied by Door Manufacturer.
10. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Doors always open from interior by use of exit devices. Active leaf is locked and unlocked from exterior by use of keyed cylinder. Door status reported by use of electronic hinge connected to security system. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate door operator and remote dogging with building access control system. Door is Fail Secure.

AA. Hardware Set 27: (Pair Doors LI-4 and LI-5)

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.
4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction, exterior lock cylinder hardware, night latch function. RHR leaf. Provided by Campus - installed by Contractor (1) required.
5. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 Series with Electric Latch Retraction, dummy trim. Emergency Only. Provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Provided by Door Manufacturer.

a. Pulls – Active Leaf: Night Latch Trim (1) required.
b. Pulls – Inactive Leaf: Dummy Trim (1) required.

7. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (2) required, provided by Campus, installed by Contractor.
8. Metal Door Protection: BHMA A156.16 - (2) required: push side, 8 inches high.
9. Weatherstripping: Head, jambs, meeting stile and sill. Supplied by Door Manufacturer.
10. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Egress Only. Doors always open from interior by use of exit devices. Active leaf is locked and unlocked from exterior by use of keyed cylinder. Door status reported by use of electronic hinge connected to security system. Coordinate door operator and remote dogging with building access control system. Door is Fail Secure.

BB. Hardware Set 28: (Pair Doors LI-7E)

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (6) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (2) required.
3. Junction Box: (1) required.

4. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin –QEL99 with Electric Latch Retraction, exterior lock cylinder hardware, storeroom function. RHR leaf. Provided by Campus - installed by Contractor (1) required.
5. Surface Vertical Rod (upper rod only) Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction storeroom function. Emergency Only. Provided by Campus - installed by Contractor (1) required.
6. Operating Trim: Provided by Door Manufacturer.

    a. Pull – Active Leaf: Night Latch (1) required.
    b. Pull: -Inactive Leaf: Dummy Trim (1) required.

7. Swing Door Operator LCN 4600 with stop arm provided by Campus - installed by Contractor (1) required, RHR.
8. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting LHR leaf. (1) required, provided by Campus, installed by Contractor.
9. Metal Door Protection: BHMA A156.16 - (1) required: push side, 8 inches high.
10. Weatherstripping: Head, jambs, meeting stile and sill. Supplied by Door Manufacturer.
11. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Doors always open from interior by use of exit devices. Active leaf is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate door operator and remote dogging with building access control system. Door is Fail Secure.

CC. Hardware Set 29: (Single Door UU-4):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Operating Trim: Provided by Door Manufacturer.

    a. Pull: Night Latch (1) required.

6. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (1) required, provided by Campus, installed by Contractor.
7. Metal Door Protection BHMA A156.16 push side, 8 inches high. (1) required.
8. Weatherstripping: Head, jambs and sill. Provided by door manufacturer.
9. Threshold: Supplied by Door Manufacturer.

Theory of Operation: Door always open from interior by use of exit device. Door status reported by use of electronic hinge connected to security system. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate remote dogging with building access control system. Door is Fail Secure.

DD. Hardware Set 30: (Single HM Door UU-17):

1. Butts: Heavy-Duty Hinge provided by Campus – installed by Contractor, (3) required.
2. Butts: Electrified Hinge (Best HD Elec w/ Monitor) provided by Campus – installed by Contractor, (1) required.
3. Junction Box: (1) required.
4. Rim Electric Exit Device: Von Duprin QEL99 with Electric Latch Retraction and exterior pull with 7-pin lock cylinder hardware provided by Campus - installed by Contractor (1) required.
5. Operating Trim:

    a. Pull: Night Latch (1) required.

6. Surface Closer: BHMA A156.4, LCN 4040XP with stop function – push-side mounting. (1) required, provided by Campus, installed by Contractor.
7. Metal Door Protection BHMA A156.16 push side, 8 inches high. (1) required.
8. Weatherstripping: Head, jamb and sill.
9. Threshold: Full saddle design – 5 inches (127 mm) wide. 1/2 inch (12 mm) high.
10. Stainless Steel exit device guard (1) Required. Rockwood R116EDPL coordinate size requirements with exit device.

Theory of Operation: Door always open from interior by use of exit device. Door is locked and unlocked from exterior by use of keyed cylinder. Door is unlatched by access control device provided by Security Contractor. Door status reported by use of electronic hinge connected to security system. Door is unlatched and relatched from exterior by security system remotely for day/night functioning. Coordinate remote dogging with building access control system. Door is Fail Secure.

EE. Hardware Set 31: (Single Existing HM Temporary Egress Door LI-9A):
1. Existing Butts to remain.
2. Remove Existing rim panic.
3. Door Trim: Provided by and Installed by Contractor.
    a. Pull: Dummy Trim (1) required.
4. Existing Surface Closer to remain - pull-side mounting.
5. Rim Exit Device: Von Duprin 99 Series - Provided by Campus - Installed by Contractor. (1) required (Installed post construction of door LI-9 - The door is to be returned to its original function.).

END OF SECTION 087100

SECTION 08 80 00 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Insulating glass
2. Spandrel Glass
3. Insulated Sandwich Panels glazed into aluminum frames
4. Glazing sealants and tapes.
5. Miscellaneous glazing materials.

B. Related Requirements:

1. Section 08 11 13 “Hollow Metal Doors and Frames” for hollow metal doors with glass lites.
2. Section 08 11 16 "Interior Aluminum Doors and Frames" for interior aluminum doors with glass.
3. Section 08 41 13 "Aluminum-Framed Entrances and Storefronts." for exterior aluminum entrance doors with glass.
4. Section 08 44 13 “Glazed Aluminum Curtain Walls” for additional exterior fenestration.

1.2 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.

C. Interspace: Space between lites of an insulating-glass unit.

1.3 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances to achieve proper safety margins for glazing retention under each design load case, load case combination, and service condition.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Glass Samples: For each type of the following products; 12 inches (300 mm) square.

1. Insulating glass.
2. Spandrel Glass

C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

D. Delegated Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For installer and manufacturers of insulating-glass units.

B. Product Certificates: For glass.

C. Product Test Reports: Provide data performed by a qualified testing agency for the following:

1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.

D. Submit an Environmental Product Declaration (EPD) from the manufacturer for glass within this specification section, if available. A statement of the contactor’s good faith effort to obtain the EPD shall be provided if not available.

1. Manufacturer-provided EPD’s must be product specific Type III (Third Party Reviewed), in adherence with ISO 14025 Environmental Labels and Declarations, ISO 14044 Environmental Management – Life Cycle Assessment and ISO 21930 Core Rules for Environmental Product declarations of Construction Products and Services

E. Sample Warranties: For special warranties.

1.6 QUALITY ASSURANCE

A. Fabricated-Glass Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved and certified by coated-glass manufacturer.

B. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.

D. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021 to conduct the testing indicated.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials in accordance with manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F (4.4 deg C).

1.9 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass. Defects include peeling, cracking, and other indications of deterioration in coating.

1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: 10 years from date of Substantial Completion.

C. Manufacturer's Special Warranty for Heat-Soaked Tempered Glass: Manufacturer agrees to replace heat-soaked tempered glass units that spontaneously break due to nickel sulfide (NiS)

inclusions at a rate exceeding 0.3 percent (3/1000) within specified warranty period. Coverage for any other cause is excluded.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Guardian Glass, 50 Forge Ave., Geneva, NY 14456, and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed or comparable products by the following, provided products are in compliance with the performance criteria:

1. Saint-Gobain, 20 Moores Road, Malvern, PA 19355, 855 887-6457; Saint-Gobain-Northamerica.com.
2. Vitro Architectural Glass, 400 Guys Run Road, Cheswick, PA 15024, 855 887 6457;vitroglazings.com

2.2 SOURCE LIMITATIONS

A. Obtain products, including related accessories, from single source from single manufacturer.

2.3 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 35 73 "Delegated Design," to design glazing.

C. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined in accordance with the IBC and ASTM E1300:

1. Design Wind Pressures: As indicated on Drawings.

a. Wind Design Data: As indicated on Drawings.
b. Determine design wind pressures applicable to Project according to ASCE/SEI 7, based on heights above grade indicated on Drawings.

1) Wind Design Data: As indicated on Drawings.
2) Importance Factor: 1.0.
3) Exposure Category: B.

D. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II and as follows:

1. All glazing within doors.
2. All glazing less than 60 inches (1524 mm) above the floor and within 24 inches (610 mm) of the latch side or hinge side of a door jamb.

E. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites 6 mm thick.
2. For laminated-glass lites, properties are based on products of construction indicated.
3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
4. U-Factors: Center-of-glazing values, in accordance with NFRC 100 and based on most current non-beta version of LBL's WINDOW computer program, expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).
5. SHGC and Visible Transmittance: Center-of-glazing values, in accordance with NFRC 200 and based on most current non-beta version of LBL's WINDOW computer program.
6. Visible Reflectance: Center-of-glazing values, in accordance with NFRC 300.

2.4 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the IGCC.

D. Thickness: Where glass thickness is indicated, it is a minimum.

1. Minimum Glass Thickness for Exterior Lites: 6 mm.

E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance

Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.5 GLASS PRODUCTS

A. Clear Annealed Float Glass: ASTM C1036, Type I, Class 1 (clear), Quality-Q3.

B. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

C. Heat-Strengthened Float Glass: ASTM C1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

D. Silicone-Coated Spandrel Glass: ASTM C1048, Type I, Condition C, Quality-Q3.

2.6 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified in accordance with ASTM E2190.

1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
2. Perimeter Spacer: Manufacturer’s standard spacer material and construction as required to attain specified performance values.
3. Desiccant: Molecular sieve or silica gel, or a blend of both.

2.7 BIRD GLASS

A. Bird Friendly Etch, Non-Directional Pattern Glass: Etch pattern application on exterior most surface. Glass has been tested by the American Bird Conservancy (ABC) and has achieved Threat Factors (TF) that quantify collision-avoidance effectiveness. Pattern is non-directional, 6 mm translucent dots, randomly spaced no more than 2” x 4” apart.

1. Basis-of-Design Product: Guardian Glass, LLC; Bird1st Etch SqX24.

a. Provide Bird Friendly Etch Pattern that has a threat factor score in accordance with ABC of 25 or better, subject to compliance with requirements listed or comparable products, provided products are approved and in compliance with the performance criteria.

2.8 GLAZING GASKETS

A. See Section 08 41 13 for glazing gasket requirements.

2.9 GLAZING SEALANTS

A. General:

1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range of industry colors.

B. Glazing Sealant:

1. Neutral-curing silicone glazing sealant complying with ASTM C920, Type S, Grade NS, Class 25, Use NT.

    a. Applications: As a cap bead for tape glazed openings.

2.10 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:

1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
2. AAMA 807.3 tape, for applications in which tape is not subject to continuous pressure.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:

1. AAMA 810.1, Type 1, for glazing applications in which tape acts as primary sealant.

2.11 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, recommended in writing by manufacturers of glass and other glazing materials for

application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks:

1. Elastomeric material with a Shore A durometer hardness of 85, plus or minus 5.
2. Type recommended in writing by sealant or glass manufacturer.

D. Spacers:

1. Neoprene blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
2. Type recommended in writing by sealant or glass manufacturer.

E. Edge Blocks:

1. EPDM or Silicone with Shore A durometer hardness per manufacturer's written instructions.
2. Type recommended in writing by sealant or glass manufacturer.

F. Cylindrical Glazing Sealant Backing: ASTM C1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

G. Glazing Installation Hardware:

1. Frameless Glazing Accessories: Clear anodized extruded aluminum profiles.

a. Top: Concealed aluminum glazing channel, 2-inches (51 mm) deep.
b. Jambs: Concealed aluminum angle, 3/4-inch by 3/4-inch (21 mm by 21 mm).
c. Sill: Concealed aluminum glazing channel, 3/4-inches (21 mm) deep.
d. Floor: Exposed aluminum glazing channel, 3/4-inches (21 mm) deep.

2.12 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

a. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.

C. Grind smooth and polish exposed glass edges and corners.

2.13 INSULATED SANDWICH PANELS

A. Panel FRP-1:

1. Outdoor Panel: Fiber-Reinforced board

    a. Surface: abuse resistant with U.V. additives to aide in the protection against normal weathering and normal usage.
    b. Thickness: 1/8 inch
    c. Color Throughout: Match existing precast panels to remain.
    d. Texture: patterned sandstone

2. Core: expanded urethane foam injected in place.

    a. Density: 5 lb.
    b. R 4.8
    c. Compressive Strength: ASTM D 1621: 80 psi
    d. Compressive Modulus: ASTM D 1621: 140 psi
    e. Tensile Adhesion: ASTM D 1623: 60 psi

3. Indoor Panel Material: Match outdoor panel.

    a. Thickness: 1/8 inch
    b. Color: Clear Aluminum.

4. Overall thickness of insulated panel: 1 inch.
5. Surface Burning Characteristics; ASTM E 84
6. Flame Spread: Maximum of 200, Class C.
7. Smoke Developed: Maximum of 450, Class C.
8. Impact Strength; ASTM D256 nominal value: 14.0 ft-lb/in, notched.
9. Gardner Impact Strength: ASTM D3029: 120 in-lb.
10. Water Absorption: ASTM D570: 0.20%/24hrs@770F
11. Chemical Resistance; ASTM D543: Excellent Rating
12. Thermal and Humid Aging of Urethane foam core, Nominal Value, ASTM D 26: Less than 2% Volume Change

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Presence and functioning of weep systems.
3. Minimum required face and edge clearances.
4. Effective sealing between joints of glass-framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
2. Provide 1/8-inch- (3-mm-) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and in accordance with requirements in referenced glazing publications.

H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended in writing by gasket manufacturer.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

G. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners

and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.

D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.

E. Install gaskets so they protrude past face of glazing stops.

3.6 CLEANING AND PROTECTION

A. Immediately after installation, remove nonpermanent labels and clean surfaces.

1. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits or stains.

2. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

B. Remove and replace glass that is damaged during construction period.

C. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.7 MONOLITHIC GLASS SCHEDULE

1. Glass Type GL-2: Clear annealed, heat-strengthened or fully tempered float glass as required to comply with performance criteria.
2. Minimum Thickness: 6 mm.
3. Provide decal as selected by architect for visibility .
4. Provide safety glazing labeling.

3.8 INSULATING GLASS SCHEDULE

A. Glass Type GL-1: Low-E-Coated Clear Insulating Vision Glass:

1. Basis-of-Design Product: Guardian Glass LLC, SunGuard SN 68 on Clear (match existing)
2. Overall Unit Thickness: 1 inch (25 mm).
3. Minimum Thickness of Each Glass Lite: 6 mm.
4. Outdoor Lite: Clear float glass.
    a. Low-E Coating: Sputtered on No. 2 surface: Guardian SunGuard SN 68.
    b. Heat Treatment or Fully Tempered as required to comply with performance criteria.
5. Interspace Argon filled, 1/2 inch wide.
6. Indoor Lite: Clear float glass.
    a. Heat Treatment: Heat-strengthened or fully tempered as required to comply with performance criteria.
7. Glass Unit Performance Values:
    a. Winter Nighttime U-Factor: 0.245 maximum.
    b. Summer Daytime U-Factor: 0.22 maximum.
    c. Solar Heat Gain Coefficient: 0.37 maximum.
8. Provide safety glazing labeling as required.

3.9 INSULATING SPANDREL GLASS SCHEDULE

A. Glass Type GL3: Low-E-Coated, Ceramic or Silicone Coated, Insulating Spandrel Glass.

1. Basis-of-Design Product: Guardian Glass LLC, SunGuard SN 68 on Clear with **Green** Spandrel.
2. Overall Unit Thickness: 1 inch (25 mm).
3. Minimum Thickness of Each Glass Lite: 6 mm.
4. Outdoor Lite: Clear float glass.
    a. Low-E Coating: Sputtered on No. 2 surface: Guardian SunGuard SN 68.
    b. Heat Treatment: Heat-strengthened or fully tempered as required to comply with performance criteria.
5. Interspace Content: Argon filled, 1/2 inch wide.
6. Indoor Lite: Clear float glass.
    a. Spandrel Coating on No. 4 Surface: Match Existing **Green** Spandrel Glass.
    b. Heat Treatment: Fully Tempered.
7. Glass Unit Performance Values:

a. Winter Nighttime U-Factor: 0.245 maximum.
b. Summer Daytime U-Factor: 0.22 maximum.
c. Solar Heat Gain Coefficient: 0.33 maximum.

8. Provide safety glazing labeling as required.

B. Glass Type GL4: Low-E-Coated Ceramic or Silicone Coated Insulating Spandrel Glass:

1. Basis-of-Design Product: Guardian Glass LLC, SunGuard SN 68 on Clear with **Black** Spandrel.
2. Overall Unit Thickness: 1 inch (25 mm).
3. Minimum Thickness of Each Glass Lite: 6 mm.
4. Outdoor Lite: Clear, float glass

a. Low-E Coating: Sputtered on No. 2 surface: Guardian SunGuard SN 68.
b. Heat Treatment: Heat -Strengthened or Fully Tempered as required to comply with performance criteria.

5. Interspace Content: Argon filled, 1/2 inch wide.
6. Indoor Lite: Clear float glass.

a. Spandrel Coating on No. 4 Surface: **Black** Spandrel Color.
b. Heat Treatment: Fully Tempered.

7. Glass Unit Performance Values:

a. Winter Nighttime U-Factor: 0.245 maximum.
b. Summer Daytime U-Factor: 0.22 maximum.
c. Solar Heat Gain Coefficient: 0.33 maximum.

3.10 INSULATING BIRD GLASS

A. Glass Type GL-5: Bird Friendly Etch Pattern, Low-E-Coated, Clear, Insulating Glass,.

1. Basis-of-Design Product: Guardian Glass LLC, Guardian Bird 1st Etch. SqX24 with SN 68 on Clear.
2. Overall Unit Thickness: 1 inch (25 mm).
3. Minimum Thickness of Each Glass Lite: 6 mm.
4. Outdoor Lite: Clear float glass.

a. Bird Deterrent on No.1 Surface: Guardian Bird 1st Etch SqX24 (Non-directional 6 mm translucent dots, randomly spaced 2″ x 4″ apart).
b. Low-E Coating Sputtered on No.2 Surface: Guardian SunGuard SN 68.
c. Heat Treatment: Heat Strengthened or Fully Tempered as required to comply with performance criteria.
d. Etch Pattern Orientation: Installed at in-plane orientation angle as advised by supplier for intended bird collision deterrence benefit.
e. Threat Factor: 25.

5. Interspace Content: Argon filled, 1/2 inch wide.
6. Indoor Lite: Clear float glass, Heat-Strengthened or fully tempered as required to comply with performance criteria.
7. Glass Unit Performance Values:

    a. Winter Nighttime U-Factor: 0.245 maximum.
    b. Summer Daytime U-Factor: 0.22 maximum.
    c. Visible Light Transmittance: 68 percent minimum.
    d. Solar Heat Gain Coefficient: 0.37 maximum.

B. Provide safety glazing labeling as required

END OF SECTION 08 80 00

SECTION 09 22 16 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Non-load-bearing steel framing systems for interior partitions.
2. Suspension systems for interior ceilings and soffits.
3. Grid suspension systems.

B. Related Requirements:

1. Section 054000 "Cold-Formed Metal Framing" for exterior and interior loadbearing, structural framing.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Include layout, spacings, sizes, thicknesses, and types of nonstructural steel framing and fastening and anchorage details.
2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, and attachments to adjoining work.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For code-compliance certification of studs and track.

1.5 QUALITY ASSURANCE

A. Code-Compliance Certification of Studs and Track: Provide documentation that framing members are certified in accordance with product-certification program of the Steel Framing Industry Association the Steel Stud Manufacturers Association or the Supreme Steel Framing System Association.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Protect materials from corrosion, deformation, and other damage during delivery, storage, and handling in accordance with AISI S202. "Code of Standard Practice for Cold-Formed Steel Structural Framing."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. STC-Rated Assemblies: Where indicated on Drawings, provide assemblies incorporating nonstructural framing identical to those of assemblies tested in accordance with ASTM E90 and classified in accordance with ASTM E413 by an independent testing agency.

B. Horizontal Deflection: For wall assemblies, limited to 1/360 of the wall height based on the following horizontal loading:

1. Horizontal Loading: 10 lbf/sq. ft. (480 Pa).

C. Post-Installed Anchors: Fastener systems with an evaluation report, acceptable to authorities having jurisdiction, based on ICC-ES AC01AC193, AC58 or AC308as appropriate for the substrate.

1. Securing Hangers:

a. Type: Torque-controlled, expansion anchor torque-controlled, adhesive anchor or adhesive anchor.
b. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated on Drawings.
c. Stainless Steel Material for Exterior or Interior Locations: Alloy Group 1 (A1) stainless steel bolts, ASTM F593, and nuts, ASTM F594.

2.2 NONSTRUCTURAL STEEL FRAMING

A. Framing Members, General: Comply with requirements in AISI S220 for conditions indicated on Drawings.

1. Steel Sheet Components: Comply with ASTM C645 requirements for metal unless otherwise indicated
2. Protective Coating: Comply with; ASTM A653/A653M, G40 (Z120); hot-dip galvanized unless otherwise indicated.

B. Studs and Track: ASTM C645. Use either conventional steel studs and tracks or embossed, high-strength steel studs and tracks..

1. Minimum Base-Steel Thickness: 0.0329 inch (0.836 mm)..
2. Minimum Yield Strength: 33 ksi (230 MPa).
3. Depth: As indicated on Drawings.

C. Slip-Type Head Joints: Where indicated on Drawings, provide one of the following:

1. Clip System: Clips designed for use in head-of-wall deflection conditions that provide a positive attachment of studs to track while allowing minimum vertical movement.
2. Single Long-Leg Track: Top track with solid, 2-inch- (51-mm-) deep flanges in base-steel thickness not less than that of studs, installed with studs friction fit into track and with continuous bridging located within 12 inches (305 mm) of the top of studs to provide lateral bracing.
3. Double-Track System: Top outer track sized to friction-fit over inner track and inner track with 2-inch- (51-mm-) deep flanges in base-steel thickness not less than that of studs and fastened to studs.
4. Deflection Track: Steel sheet top track manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.

D. U-Channel: Cold-rolled steel, 0.0538-inch (1.367-mm) minimum base-steel thickness, with minimum 1/2-inch- (13-mm-) wide flanges.

1. Depth:

a. Bridging: As indicated on Drawings.
b. Suspended-Assembly Carrying Channels (Main Runners): As indicated on Drawings.

E. Rigid Hat-Shaped Furring Channels:

1. Minimum Base-Steel Thickness: 0.0329 inch (0.836 mm).
2. Depth: 7/8 inch

F. Grid Suspension Systems for Gypsum Board Ceilings: ASTM C645, direct-hung system composed of main beams and cross-furring members that interlock.

2.3 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards.

1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

B. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.

1. Suspended Ceiling Systems:

    a. Splicing Carrying Channels and Furring Members: Use double loops of minimum 0.0625-inch- (1.59-mm-) diameter wire.
    b. Saddle Tying Main Runners and Cross Furring: Use minimum 0.0625-inch- (1.59-mm-) diameter wire, or double strand of 0.0475-inch- (1.21-mm-) diameter wire.

C. Wire Hangers: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.162 inch (4.12 mm) in diameter.

D. Power-Actuated Anchors: Fastener systems with an evaluation report, acceptable to authorities having jurisdiction, based on ICC-ES AC70.

E. Isolation Strip at Exterior Walls: Provide one of the following:

1. Asphalt-Saturated Organic Felt: ASTM D226/D226M, Type I (No. 15 asphalt felt), nonperforated.
2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch (3.2 mm) thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, substrates, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.

1. Furnish concrete inserts and other devices required to other trades for installation in advance of time needed for coordination and construction.

B. Coordination with Sprayed Fire-Resistive Materials:

1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling track to surfaces indicated on Drawings to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches (610 mm) o.c.
2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of nonstructural steel framing. Do not reduce thickness of fire-resistive

materials below that required for fire-resistance ratings indicated on Drawings. Protect adjacent fire-resistive materials from damage.

3.3 NONSTRUCTURAL METAL FRAMING INSTALLATION, GENERAL

A. Installation Standard: ASTM C754.

1. Gypsum Plaster Assemblies: Also comply with requirements in ASTM C841 that apply to framing installation.
2. Portland Cement Plaster Assemblies: Also comply with requirements in ASTM C1063 that apply to framing installation.
3. Gypsum Veneer Plaster Assemblies: Also comply with requirements in ASTM C844 that apply to framing installation.
4. Gypsum Board Assemblies: Also comply with requirements in ASTM C840 that apply to framing installation.

B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.

C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

D. Install bracing at terminations in assemblies.

E. Do not bridge building control and expansion joints with framing members. Frame both sides of joints independently.

3.4 NONSTRUCTURAL STEEL FRAMING INSTALLATION

A. Install framing system components at spacings indicated on Drawings, but not greater than spacings required by referenced installation standards for assembly types.

B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

C. Install studs so flanges within framing system point in same direction.

D. Install track at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated on Drawings to terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.

a. Install two studs at each jamb unless otherwise indicated on Drawings.
b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure unless otherwise indicated on Drawings.

3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated on Drawings. Install framing below sills of openings to match framing required above door heads.

4. STC-Rated Partitions: Install framing to comply with STC-rated assembly indicated on Drawings.

E. Direct Furring:

1. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.

F. Wall-Furring Bracket Systems: Install brackets with serrated edges facing upward spaced at minimum 48 inches (1219 mm) o.c. vertically with 6 inches (152 mm) maximum from floor and ceiling, and minimum 36 inches (914 mm) o.c. horizontally with 4 inches (102 mm) maximum from abutting construction, unless otherwise indicated on Drawings.

G. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by faces of adjacent framing.

H. Suspended Assemblies: Isolate suspension assemblies from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

1. Hangers: Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system spaced as indicated on Drawings.

a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, counter-splaying, or other equally effective means.
b. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.

1) Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.

c. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.

d. Do not attach hangers to steel roof deck.
e. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
f. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
g. Do not connect or suspend framing from ducts, pipes, or conduit.

2. Carrying Channels (Main Runners): U-channels spaced.
3. Furring Channels (Furring Members): As indicated on Drawings Rigid hat-shaped furring channels Resilient furring channels.

a. Spacing: As indicated on Drawings.

I. Installation Tolerances for Nonstructural Steel Framing:

1. Framing Members: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.
2. Suspended Assemblies: Install suspension systems that are level to within 1/8 inch in 12 ft. measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

3.5 GRID SUSPENSION SYSTEMS INSTALLATION

A. Grid Suspension Systems: Install in accordance with manufacturer's written instructions. Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

B. Installation Tolerances for Grid Suspension Systems: Install suspension systems that are level to within 1/8 inch in 12 ft. measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 092216

SECTION 09 23 00 - GYPSUM PLASTERING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Expanded metal lath.
2. Accessories.
3. Base-coat gypsum plaster materials.
4. Finish-coat gypsum plaster materials.
5. Plaster Patching

B. Related Requirements:

1. Section 092900 "Gypsum Board" for gypsum board installation, Sound-Attenuation Blankets and acoustic sealants.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site

1. ACTION SUBMITTALS: Product Data: For each type of product.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, moisture, direct sunlight, contamination, corrosion, construction traffic, and other causes.

1.4 FIELD CONDITIONS

A. Comply with ASTM C842 requirements or gypsum plaster manufacturer's written instructions, whichever are more stringent.

B. Room Temperatures: Maintain temperatures at not less than 55 deg F or greater than 80 deg F for at least seven days before application of gypsum plaster, continuously during application, and for seven days after plaster has set or until plaster has dried.

C. Avoid conditions that result in gypsum plaster drying out too quickly.

1. Distribute heat evenly; prevent concentrated or uneven heat on plaster.

2. Maintain relative humidity levels for prevailing ambient temperature that produce normal drying conditions.
3. Ventilate building spaces in a manner that prevents drafts of air from contacting surfaces during plaster application and until plaster is dry.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain base- and finish-coat plasters from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Sound-Transmission Characteristics: As specified in Section 09 29 00 “Gypsum Plaster”

2.3 EXPANDED METAL LATH

A. Expanded Metal Lath: ASTM C847; cold-rolled carbon-steel sheet, hot-dip galvanized with ASTM A653/A653M G60 (Z180) zinc coating.

1. Flat Diamond-Mesh Lath: 2.5 lb/sq. yd. (1.4 kg/sq. m), unbacked.

a. Paper Backing: Kraft paper factory bonded to back of lath.

2.4 ACCESSORIES

A. General: Comply with requirements in ASTM C841, and coordinate depth of trim and accessories with thicknesses and number of plaster coats required.

B. Metal Accessories:

1. Cornerite: Fabricated from expanded metal lath, hot-dip galvanized with ASTM A653/A653M G60 zinc coating.
2. Striplath: Fabricated from expanded metal lath, hot-dip galvanized with ASTM A653/A653M G60 zinc coating.
3. Cornerbeads: Fabricated from zinc-coated (galvanized) steel, to match existing.
4. Casing Beads: Fabricated from zinc-coated (galvanized) steel; square-edged style; with expanded flanges.
5. Control Joints: Fabricated from zinc-coated (galvanized) steel; one-piece-type, folded pair of unperforated screeds in M-shaped configuration; with perforated flanges and removable protective tape on exposed face of control joint.
6. One-Piece Expansion Joints: Fabricated from zinc-coated (galvanized) steel; folded pair of unperforated screeds in M-shaped configuration; with expanded flanges.

7. Two-Piece Expansion Joints: Fabricated from zinc-coated (galvanized) steel; formed to produce slip-joint and square-edged reveal that is adjustable from 1/4 to 5/8 inch wide; with perforated flanges.

C. Aluminum Trim: Extruded accessories of profiles and dimensions indicated on Drawings.

1. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B221 (ASTM B221M), Alloy 6063-T5.

2.5 BASE-COAT GYPSUM PLASTER MATERIALS

A. Lightweight-Gypsum Ready-Mixed Plaster: ASTM C28/C28M, with factory-mixed perlite aggregate.

B. Aggregates for Base-Coat Plasters: ASTM C35, sand.

2.6 FINISH-COAT GYPSUM PLASTER MATERIALS

A. Gypsum Ready-Mixed Finish Plaster: Manufacturer's standard, factory-mixed, gaged, interior finish.

B. Lime: ASTM C206, Type S, special or Type N, normal finishing hydrated lime.

C. Aggregates for Float Finishes: ASTM C35, sand; graded in accordance with ASTM C842.

2.7 MISCELLANEOUS MATERIALS

A. Water for Mixing and Finishing Plaster: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.

B. Bonding Compound: ASTM C631; recommended by plaster manufacturer for application indicated.

C. Fasteners for Attaching Metal Lath to Substrates: ASTM C841.

D. Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, not less than 0.0475-inch diameter unless otherwise indicated.

E. Acoustical Sealant: Specified in Section 09 29 00 "Gypsum Board."

F. Mix Additives: Use gypsum plaster accelerator and retarder products of plaster manufacturer if required by Project conditions. Use only additives that plaster manufacturer recommends in writing for use with plaster to which it is added.

2.8 PLASTER MIXES

A. Mixing: Comply with ASTM C842 and manufacturer's written instructions for applications indicated.

B. Mix Additives: Use accelerators and retarders, if required by Project conditions, in accordance with manufacturer's written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Reject plaster materials that are wet or moisture damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.

3.3 INSTALLATION, GENERAL

A. STC-Rated Assemblies: Install components in accordance with requirements for design designations from listing organization and publication indicated on Drawings.

B. Sound-Attenuation Blankets: As specified in Section 09 29 00 Gypsum Board“.

C. Acoustical Sealant: As specified in Section 09 29 00 Gypsum Board“.

3.4 EXPANDED METAL LATH INSTALLATION

A. Expanded Metal Lath: Install in accordance with ASTM C841.

1. Partition Framing and Vertical Furring: Install flat diamond-mesh lath.
2. Flat-Ceiling and Horizontal Framing: Install flat diamond-mesh lath.
3. On Solid Surfaces, Not Otherwise Furred: Install self-furring, diamond-mesh lath.
4. Channel-Stud Solid-Plaster Partitions: Where supported by channel studs and L-runners, install flat diamond-mesh lath.

3.5 INSTALLATION OF ACCESSORIES

A. General: Install in accordance with ASTM C841.

B. Cornerbeads: Install at external corners.

C. Casing Beads: Install at terminations of plasterwork, except where plaster passes behind and is concealed by other work and where metal screeds, bases, or frames act as casing beads.

D. Control Joints: Locate as approved by Architect for visual effect and as follows:

1. With spacing between joints in either direction not exceeding the following:

    a. Partitions: 30 ft..
    b. Ceilings: 30 ft..

2. Where furred or suspended ceilings abut columns, walls, beams, or other vertical elements.
3. Where ceiling framing or furring changes direction.
4. Where control joints occur in supporting construction.

E. Expansion Joints: Locate where an expansion joint occurs in supporting construction.

F. Aluminum Trim: Install in accordance with manufacturer's written instructions.

3.6 APPLICATION OF PLASTER

A. General: Comply with ASTM C842.

1. Do not deviate more than plus or minus 1/8 inch in 10 ft. from a true plane in finished plaster surfaces when measured by a 10-ft. straightedge placed on surface.
2. Finish plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground unless otherwise indicated. Where casing bead does not terminate plaster at metal frame, cut base coat free from metal frame before plaster sets and groove finish coat at junctures with metal.
3. Provide plaster surfaces that are ready to receive field-applied finishes indicated.

B. Bonding Compound: Apply on unit masonry and monolithic concrete substrates for direct application of plaster.

3.7 INSTALLATION OF BASE-COAT GYPSUM PLASTER MATERIALS

A. Over Expanded Metal Lath:

1. Scratch Coat: Gypsum neat plaster with job-mixed sand.
2. Brown Coat: Gypsum neat plaster with job-mixed sand.

B. Over Unit Masonry: Gypsum neat plaster with job-mixed sand.

C. Over Monolithic Concrete: Gypsum neat plaster with job-mixed sand.

3.8 INSTALLATION OF FINISH-COAT GYPSUM PLASTER MATERIALS

A. Finishes:

1. Materials: Gypsum ready-mixed finish plaster
2. Locations: Provide finish to match adjacent surfaces and existing conditions.

3.9 REPAIR

A. Repair or replace work to eliminate cracks, dents, blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

3.10 CLEANING

A. Remove temporary protection and enclosure of other work after plastering is complete.

B. Promptly remove plaster from door frames, windows, and other surfaces not indicated to be plastered.

C. Repair floors, walls, and other surfaces stained, marred, or otherwise damaged during plastering.

END OF SECTION 092300

SECTION 09 29 00 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior gypsum board.
2. Trim accessories.
3. Sound-Attenuation Blankets
4. Acoustical Sealant

B. Related Requirements:

1. Section 09 22 16 "Non-Structural Metal Framing" for nonstructural steel framing and suspension systems that support gypsum board panels.
2. Section 09 23 00 "Gypsum Plastering" for gypsum base for plaster and for other components of gypsum-plaster finishes.

1.2 DEFINITIONS

A. Gypsum Board Finishes.

1. Standard Finishing Levels:

a. **Level 0**: No taping, finishing, or accessories are required. This is typically used for temporary construction or before a final decoration is determined.
b. **Level 1**: All joints and interior angles must have tape embedded in joint compound. Surface should be free of excess compound, though tool marks and ridges are acceptable. This level is common in plenum areas, attics, or service corridors not open to public view.
c. **Level 2**: Tape is embedded in compound and wiped with a joint knife, leaving a thin layer over joints and angles. Fastener heads and accessories must also be covered with one coat of compound. This is often specified for garages, warehouses, or as a substrate for tile.
d. **Level 3**: Includes tape embedded in compound plus one additional coat of compound over all joints and interior angles. Fastener heads and accessories receive two separate coats. All compound must be smooth and free of tool marks. This is typically used for surfaces to receive heavy-grade wall coverings or medium-to-heavy textures.
e. **Level 4**: This is the *standard finish* for most residential and commercial areas. It requires tape embedded in compound plus two separate coats over flat joints and one separate coat over interior angles. Fasteners and accessories receive three separate coats of compound. The surface must be smooth and free of ridges.

Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

f.

g. **Level 5**: The highest level of finish, involving all Level 4 steps followed by a thin skim coat of joint compound applied to the entire surface to conceal imperfections and provide a uniform texture. This is specified for areas with critical lighting or where high-gloss paints are used.

2. See “APPLICATION OF JOINT TREATMENT MATERIALS” in Part 3 of this section.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Verification: Actual sample of finished products for the following:

1. Trim Accessories: Actual sample of finished products for each profile of aluminum trim required.

a. Size: Full size profile, 12 inches (305 mm) long,

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C840 requirements or manufacturer's written instructions, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, moisture damaged, or mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain each type of gypsum panel and joint finishing material from single source with resources to provide products of consistent quality in appearance and physical properties.

2.2 PERFORMANCE REQUIREMENTS

A. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings in accordance with ASTM E90 and classified in accordance with ASTM E413; tested by a qualified testing agency.

2.3 GYPSUM BOARD, GENERAL

A. Size: Provide panel products in maximum lengths and widths available that will minimize joints in each area and that correspond with support system specified or indicated on Drawings.

2.4 INTERIOR GYPSUM BOARD

A. Gypsum Wallboard: ASTM C1396/C1396M.

1. Thickness: 5/8 inch (15.9 mm).
2. Long Edges: Tapered.

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C1047.

1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc or paper-faced galvanized-steel sheet.
2. Shapes:

a. Cornerbead.
b. LC-Bead: J-shaped; exposed long flange receives joint compound.
c. L-Bead: L-shaped; exposed long flange receives joint compound.
d. Expansion (control) joint.

2.6 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C475/C475M requirements.

1. Mold-Resistant Joint Compound: Use mold-resistant formulations with mold-resistant panel products.

B. Joint Tape:

1. Interior Gypsum Board: Paper.

C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.

a. Use setting-type compound for installing paper-faced metal trim accessories.

3. Fill Coat: For second coat, use setting-type, sandable topping drying-type, all-purpose compound.
4. Finish Coat: For third coat, use setting-type, sandable topping compound.

2.7 AUXILIARY MATERIALS

A. Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.

B. Steel Drill Screws: ASTM C1002 unless otherwise specified or indicated on Drawings.

1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.

C. Sound-Attenuation Blankets: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting fibers manufactured from glass, slag wool, or rock wool; 2.5 pcf.

D. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex acoustical sealant complying with ASTM C834.

1. Colors of Exposed Acoustical Joint Sealants: As selected by Architect from manufacturer's full range of colors.

E. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION AND FINISHING OF PANELS, GENERAL

A. Comply with ASTM C840 requirements.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.6 mm) of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919 requirements and with manufacturer's written instructions for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

J. Install sound-attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 INSTALLATION OF INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Gypsum Wallboard: As indicated on Drawings.

B. Single-Layer Application:

1. At wall locations taller than the length of the gypsum board sheet, install panels horizontally unless otherwise required by fire-resistance-rated assembly.
2. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated on Drawings.
3. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise specified or indicated on Drawings or required by fire-resistance-rated assembly, and minimize end joints.

a. Stagger abutting end joints not less than one framing member in alternate courses of panels.

4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Multilayer Application:

Retain first subparagraph below for multilayer gypsum board ceilings.

1. 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 one framing member, 16 inches (406 mm) minimum, from parallel base-layer joints, unless otherwise indicated on Drawings or required by fire-resistance-rated assembly.
2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over studs or furring members and face-layer joints offset at least one stud or furring member with base-layer joints unless otherwise indicated on Drawings or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

3.4 INSTALLATION OF TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim in accordance with manufacturer's written instructions.

B. Control Joints: Install control joints in accordance with ASTM C840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners.
2. LC-Bead: Use at exposed panel edges.
3. L-Bead: Use at exposed panel edges

D. Aluminum Trim: Install in locations indicated on Drawings.

3.5 APPLICATION OF JOINT TREATMENT MATERIALS

A. Finishing Panel Products: Treat joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare panel surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints and damaged surface areas.

C. Apply joint tape over panel joints, except for trim products specifically indicated as not intended to receive tape.

D. Interior Gypsum Board: Finish panels to level indicated below and in accordance with ASTM C840:

1. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated. Match existing adjacent surfaces for a seamless transition from existing to new. For more information see Article 1.2 DEFINITIONS in this specification section.

a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

3.6 PROTECTION

A. Protect adjacent surfaces from joint compound and promptly remove from floors and other non-gypsum board surfaces. Repair surfaces stained, marred, or otherwise damaged during gypsum board installation and finishing.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 09 51 13 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Acoustical panels.
2. Metal suspension system.
3. Metal edge moldings and trim.

B. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data:

1. For each type of product.

B. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:

1. Acoustical Panels: Set of 6-inch- (150-mm-) square Samples of each type, color, pattern, and texture.
2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch- (150-mm-) long Samples of each type, finish, and color.
3. Clips: Full-size clips.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Ceiling suspension-system members.
2. Structural members to which suspension systems will be attached.
3. Method of attaching hangers to building structure.

a. Furnish layouts for cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.

4. Carrying channels or other supplemental support for hanger-wire attachment where conditions do not permit installation of hanger wires at required spacing.
5. Size and location of initial access modules for acoustical panels.
6. Items penetrating finished ceiling and ceiling-mounted items including the following:

a. Lighting fixtures.
b. Diffusers.
c. Grilles.
d. Speakers.
e. Sprinklers.
f. Access panels.
g. Perimeter moldings.

7. Minimum Drawing Scale: 1/8 inch = 1 foot (1:96).

B. Qualification Data: For testing agency.

C. Product Test Reports: For each acoustical panel ceiling, for tests performed by manufacturer and witnessed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same production run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Acoustical Ceiling Units: Full-size panels equal to 5 percent of quantity installed.
2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.
3. Hold-Down Clips: Equal to 2 percent of quantity installed.
4. Impact Clips: Equal to 2 percent of quantity installed.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of acoustical ceiling panel and its supporting suspension system from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings from an applicable testing agency.

1. Flame-Spread Index: Class A in accordance with ASTM E1264.
2. Smoke-Developed Index: 450 or less.

2.3 ACOUSTICAL PANELS

A. Basis of Design: Provide products as indicated in Finish Legend on Drawings.

B. Acoustical Panels (See where indicated on Drawings.)

1. Acoustical Panel Standard: Provide manufacturer's standard panels in accordance with ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.
2. Classification: Provide panels as follows:

    a. Type and Form, Type III: Mineral base with painted finish; Form 1, nodular.

3. Color: White.
4. Light Reflectance (LR): Not less than 0.75.
5. Ceiling Attenuation Class (CAC): Not less than Not applicable.
6. Noise Reduction Coefficient (NRC): Not less than 0.90.
7. Edge/Joint Detail: Reveal sized to fit flange of exposed suspension-system members.
8. Thickness: 5/8 inch (15 mm).

9. Modular Size: 24 by 24 inches (610 by 610 mm).
10. Antimicrobial Treatment: Manufacturer's standard broad spectrum, antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested in accordance with ASTM D3273, ASTM D3274, or ASTM G21 and evaluated in accordance with ASTM D3274 or ASTM G21.

2.4 METAL SUSPENSION SYSTEM

A. Basis of Design: Provide grid system as specified from same manufacturer as ceiling tiles.

B. Exposed Metal Suspension System:

1. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories in accordance with ASTM C635/C635M and designated by type, structural classification, and finish indicated.

2. Narrow-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; pre-painted, electrolytically zinc coated, or hot-dip galvanized, G30 (Z90) coating designation; with prefinished 9/16-inch- (15-mm-) wide metal caps on flanges.

   a. Structural Classification: Intermediate-duty system.
   b. End Condition of Cross Runners: Override (stepped) type.
   c. Face Design: Flat, flush.
   d. Cap Material: Cold-rolled steel or aluminum.
   e. Cap Finish: Painted white.

2.5 ACCESSORIES

A. Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

B. Wire Hangers, Braces, and Ties: Provide wires as follows:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.
2. Stainless Steel Wire: ASTM A580/A580M, Type 304, nonmagnetic.
3. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C635/C635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 0.106-inch- (2.69-mm-) diameter wire.

C. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

2.6 METAL EDGE MOLDINGS AND TRIM

A. Basis of Design: Provide edge molding by grid system manufacturer.

B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.

1. Edge moldings to fit acoustical panel edge details and suspension systems indicated and match width and configuration of exposed runners unless otherwise indicated.
2. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
3. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.
4. Extruded-Aluminum Edge Moldings and Trim: Where indicated, provide manufacturer's extruded-aluminum edge moldings and trim of profile indicated or referenced by manufacturer's designations, including splice plates, corner pieces, and attachment and other clips, complying with seismic design requirements.

    a. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.
    b. Baked-Enamel or Powder-Coat Finish: Minimum dry film thickness of 1.5 mils (0.04 mm). Comply with ASTM C635/C635M and coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

2.7 ACOUSTICAL SEALANT

A. Acoustical Sealant: Specified in Section 09 29 00 "Gypsum Board."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.

B. Layout openings for penetrations centered on the penetrating items.

3.3 ACOUSTICAL PANEL CEILINGS INSTALLATION

A. Install acoustical panel ceilings in accordance with ASTM C636/C636M and manufacturer's written instructions.

B. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structure or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
5. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, post-installed mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
6. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
7. Do not attach hangers to steel deck tabs.
8. Do not attach hangers to steel roof deck. Attach hangers to structural members.
9. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches (200 mm) from ends of each member.
10. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

C. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.

2. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends. Miter corners accurately and connect securely.
3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

D. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

E. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.

1. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
2. For reveal-edged panels on suspension-system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension-system surfaces and panel faces flush with bottom face of runners.
3. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.

3.4 ERECTION TOLERANCES

A. Suspended Ceilings: Install main and cross runners level to a tolerance of 1/8 inch in 12 feet (3 mm in 3.6 m), non-cumulative.

B. Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3 mm in 3.6 m), non-cumulative.

3.5 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.

B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 5113

SECTION 09 63 40 - STONE FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior Dimension Slate Stone Flooring.

B. Related Requirements:

1. Section 07 92 00 "Joint Sealants" for sealing joints in stone flooring system with elastomeric sealants.
2. Section 32 14 00 "Unit Paving" for concrete pavers.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each variety of stone, stone accessory, and manufactured product.

B. Shop Drawings: Include plans, sections, details, and attachments to other work.

1. Show locations and details of joints both within stone flooring and between stone flooring and other finish materials.
2. Show direction of veining, grain, or other directional patterns.

C. Samples for Verification:

1. For each stone type indicated, in sets of Samples not less than 12 inches (300 mm) square. Include at least three or more Samples in each set and show the full range of color and other visual characteristics in completed Work.
2. For each color of grout required.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For stone flooring to be included in maintenance manuals. Include product data for stone-care products used or recommended by Installer and names, addresses, and telephone numbers of local sources for products.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate stone flooring.

B. Installer Qualifications: A firm or individual experienced in installing stone flooring similar in material, design, and extent to that indicated for this Project, whose work has a record of successful in-service performance.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store and handle stone and related materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breaking, chipping, and other causes.

1. Lift stone with wide-belt slings; do not use wire rope or ropes that might cause staining. Move stone, if required, using dollies with cushioned wood supports.
2. Store stone on wood A-frames or pallets with nonstaining, waterproof covers. Arrange to distribute weight evenly and to prevent damage to stone. Ventilate under covers to prevent condensation.

B. Mark stone units, on surface that is concealed after installation, with designations used on Shop Drawings to identify individual stone units. Orient markings on vertical panels, so that they are right side up when units are installed.

C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

1.8 FIELD CONDITIONS

A. Maintain air and material temperatures to comply with requirements of installation material manufacturers, but not less than 50 deg F (10 deg C) during installation and for seven days after completion.

B. Cold-Weather Requirements for Exterior Stone Flooring: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

C. Hot-Weather Requirements for Stone Flooring: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602 and with the following:

1. Maintain temperature of materials below 100 deg F (38 deg C).
2. Do not apply mortar to substrates with temperatures of 100 deg F (38 deg C) and above.

3. When the ambient temperature exceeds 90 deg F (32 deg C), fog spray installed stone flooring until damp at least three times a day until flooring is three days old.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Slate Flooring manufactured by Sheldon Slate Products Co., Inc., 143 Fox Road, Middle Granville, NY 12849, 518 642 1280, jtatko@sheldonslate.com; sheldonslate.com, and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed or comparable products manufactured by the following, provided products are in compliance with the performance criteria:

1. Penn Slate (Penn Big Bed Slate Co., Inc.) 8450 Brown Street, Slatington, PA 18080, 610 767 4601, sales@pennslate.com; pennslate.com.
2. Or other comparable Manufacturer’s products.

2.2 SLATE

A. Material Standard: Comply with ASTM C629/C629M, Classification I Exterior.

1. Stone Abrasion Resistance: Minimum value: 8, based on testing according to ASTM C241/C241M or ASTM C1353.

B. Description: Match Existing (Gray) slate with a fine, even grain and unfading color, from clear, sound stock.

C. Finish: Match Existing.

2.3 MORTAR MATERIALS

A. Portland Cement- Lime Mortar: ASTM C150/C150M, Type I or Type II. Provide natural color or white cement as required to produce mortar color indicated.

1. Low-Alkali Cement: Not more than 0.60 percent total alkali when tested according to ASTM C114.

B. Hydrated Lime:

1. ASTM C207
2. Mortar for Setting Stone: Type S.
3. Mortar for Pointing Stone: Type N.

C. Portland Cement-Lime Mix: Packaged blend of Portland Cement complying with ASTM C150/C150M, Type I, and hydrated lime complying with ASTM C207.

D. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C979/C979M. Use only pigments with a record of satisfactory performance in stone masonry mortar.

E. Aggregate: ASTM C144; except for joints narrower than ¼-inch (6 mm) and pointing mortar, use aggregate graded with 100 percent passing No. 16 (1.18-mm) sieve.

1. White Aggregates: Natural white sand or ground white stone.

F. Latex Additive: Manufacturer's standard water emulsion, serving as replacement for part of or all gaging water, of type specifically recommended by latex-additive manufacturer for use with field-mixed Portland Cement mortar bed, and not containing a retarder.

G. Thinset Mortar:

1. Modified Dry-Set Mortar: ANSI A118.4.
2. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in the form of a preblended mix. Measure quantities by weight to ensure accurate proportions and thoroughly blend ingredients before delivering to Project site.
3. Medium-Bed Modified Dry-Set Mortar: ANSI A118.4. Provide product that is approved by manufacturer for application thickness of 3/8-inch (10 mm).

a. Prepackaged Dry-Mortar Mix: Factory-prepared, packaged mixture of portland cement; dry, redispersible, ethylene vinyl acetate or acrylic additive; and other ingredients to which only water needs to be added at Project site.
b. Mixture of Dry-Mortar Mix and Latex Additive: Mixture of packaged dry-mortar mix and liquid-latex additive.

H. Water: Potable.

2.4 ACCESSORIES

A. Temporary Spacers: Resilient plastic, nonstaining to stone, sized to suit joint thickness.

B. Joint Sealants: Manufacturer's standard sealants that comply with applicable requirements in Section 079200 "Joint Sealants" and will not stain the stone they are applied to.

C. Cleaner: Stone cleaner specifically formulated for stone types, finishes, and applications indicated, as recommended by stone producer and by sealer manufacturer. Do not use cleaning compounds containing acids, caustics, harsh fillers, or abrasives.

D. Floor Sealer: Colorless, slip and stain-resistant sealer that does not affect color or physical properties of stone surfaces, as recommended by stone producer for application indicated.

2.5 MORTAR MIXES

A. Mortar: Comply with referenced standards and with manufacturers' written instructions for mix proportions, mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortar of uniform quality and with optimum performance characteristics.

1. Do not use calcium chloride.
2. Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
3. Combine mortar materials and thoroughly mix in a mechanical batch mixer unless otherwise indicated. Discard mortar when it has reached initial set.

B. Portland Cement-Lime Setting Mortar: ASTM C270, Proportion Specification, Type S. Use amount of water to produce a stiff mixture with a moist surface when bed is ready to receive stone.

C. Latex-Modified Portland Cement Setting Mortar: Proportion and mix portland cement, aggregate, and latex additive to comply with latex-additive manufacturer's written instructions and to produce a stiff mixture with a moist surface when bed is ready to receive stone.

D. Mortar-Bed Bond Coat: Mix neat cement and water to a creamy consistency.

E. Cement-Paste Bond Coat: Mix either neat cement or cement and sand with water to a consistency similar to that of thick cream.

F. Latex-Modified Portland Cement Bond Coat: Proportion and mix Portland Cement, aggregate, and latex additive to comply with latex-additive manufacturer's written instructions.

G. Pointing Mortar: Comply with requirements indicated above for setting mortar, including type and the following:

1. Packaged Portland Cement-Lime Mix Mortar: Use Portland Cement-lime mix of selected color.

H. Joint Grout: Comply with mixing requirements in referenced ANSI standards and with manufacturer's written instructions.

2.6 SLATE STONE FABRICATION

A. Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that could impair structural integrity or function.

B. Fabricate stone to comply with requirements indicated and with the following references:

1. Comply with recommendations in MIA's "Dimension Stone - Design Manual VII."

C. Cut stone to produce pieces of thickness, size, and shape indicated.

1. Stone Thickness 5/8 inch (16 mm) unless otherwise indicated.
2. Pattern: As indicated on drawings to match existing.
3. Stone Edges: Square cut with top corner slightly eased to prevent snipping.

D. Dress joints straight and at right angle to face unless otherwise indicated. Shape beds to fit supports.

E. Finish exposed stone faces and edges to comply with requirements indicated for finish and to match approved samples.

1. Finish: Match existing.
2. Finish for Sills: Match existing.
3. Finish for Copings: Match existing sill finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive stone flooring and conditions under which stone flooring will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of stone flooring.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Vacuum concrete substrates to remove dirt, dust, debris, and loose particles.

B. Remove substances from concrete substrates that could impair mortar bond, including curing and sealing compounds, form oil, and laitance.

C. Before setting stone, clean dirty or stained stone surfaces by removing soil, stains, and foreign materials. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.

3.3 INSTALLATION, GENERAL

A. Do necessary field cutting as stone is set. Cut lines straight and true and finish field-cut edges to match shop-cut edges.

1. Use power saws with diamond blades to cut stone.

B. Set stone to comply with requirements indicated.

C. Scribe and field cut stone as necessary to fit at obstructions. Produce neat joints of size specified or indicated.

D. Provide control and expansion joints of widths and at locations indicated. Keep control and expansion joints free of mortar, grout, and other rigid materials.

3.4 INSTALLATION TOLERANCES

A. Variation in Line: For positions shown in plan for edges of flooring, ramps, steps, changes in color or finish, and continuous joint lines, do not exceed 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 3/8-inch (10 mm) maximum.

B. Variation in Joint Width: Do not vary from average joint width more than plus or minus 1/16 inch (1.5 mm) or one-fourth of nominal joint width, whichever is less.

C. Variation in Surface Plane: Do not exceed 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 3/8-inch (10 mm) maximum from level or slope indicated.

D. Variation in Plane between Adjacent Units (Lipping): Do not exceed 1/32-inch (0.8-mm) difference between planes of adjacent units.

3.5 STONE BONDED TO CONCRETE INSTALLATION

A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.
   1. Allow crack isolation membrane to cure before installing tile or setting materials over it.

B. Mix mortars and grouts to comply with "Referenced Standards" Article in the Evaluations and mortar and grout manufacturers' written instructions.

   1. Add materials, water, and additives in accurate proportions.
   2. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

C. Install stone tile in accordance with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in stone tile installation schedules. Comply with parts of the ANSI A108 series that are referenced in TCNA installation methods specified in stone tile installation schedules and apply to types of setting and grouting materials used.

   1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:

      a. Exterior stone tile floors and walls.

2. Wipe backs of stone tiles with a damp cloth to remove dirt and dust before units are installed.
3. Extend stone tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
4. Accurately form intersections and returns. Perform cutting and drilling of stone tile without marring visible surfaces. Carefully grind cut edges of stone tile abutting trim, finish, or built-in items for straight aligned joints. Fit stone tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap stone tile.
5. Lay out stone tile work and center stone tile fields in both directions in each space or on each wall area. Lay out stone tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

    a. Where adjoining stone tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
    b. Where stone tiles are specified or indicated to be whole integer multiples of adjoining stone tiles on floor, base, walls, or trim, align joints unless otherwise indicated.

6. Match stone tiles within each space by selecting tiles to achieve uniformity of color and pattern. Reject or relocate stone tiles that do not match color and pattern of adjacent tiles.
7. Pattern Orientation: For stone varieties with directional pattern, orient pattern as indicated on Drawings.

D. Movement Joints: Provide movement joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated on Drawings. Form joints during installation of setting materials, mortar beds, and stone tile. Keep joints free of dirt, debris, and setting materials prior to filling with sealants. Do not saw-cut joints after installing stone tiles.
    1. Where joints occur in concrete substrates, locate joints in stone tile surfaces directly above them.

3.6 JOINT-SEALANT INSTALLATION

A. Prepare joints and apply sealants of type and at locations indicated to comply with applicable requirements in Section 079200 "Joint Sealants."

3.7 ADJUSTING AND CLEANING

A. Remove and replace stonework of the following description:

1. Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Architect.
2. Defective joints.
3. Stone flooring and joints not matching approved Samples and mockups.
4. Stonework not complying with other requirements indicated.

B. Replace in a manner that results in stonework matching approved Samples and mockups, complying with other requirements, and showing no evidence of replacement.

C. In-Progress Cleaning: Clean stonework as work progresses. Remove mortar fins and smears before tooling joints.

D. Clean stonework after setting and pointing are complete. Use procedures recommended by stone fabricator for application types.

E. Apply sealer to cleaned stonework according to sealer manufacturer's written instructions.

3.8 PROTECTION

A. Prohibit traffic from installed stone for a minimum of 72 hours.

B. Protect installed stonework during construction with nonstaining kraft paper. Where adjoining areas require construction work access, cover stonework with a minimum of 3/4-inch (20-mm) untreated plywood over nonstaining kraft paper.

END OF SECTION 096340

SECTION 09 65 13 - RESILIENT BASE AND ACCESSORIES

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. Vinyl base.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches (300 mm) long.

C. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Furnish not less than 10 linear feet (3 linear m) for every or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C).

1.6 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive resilient products during the following periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 VINYL BASE

A. Product Standard: ASTM F1861, Type TV (vinyl, thermoplastic).

1. Description: Match Existing
2. Group: I (solid, homogeneous).
3. Style and Location:

a. Style A, Straight: Provide in areas with carpet.
b. Style B, Cove: Provide in areas with resilient floor coverings.

B. Minimum Thickness: 0.125 inch (3.2 mm).

C. Height: 4 inches (102 mm).

D. Lengths: Cut lengths 48 inches (1219 mm) long or coils in manufacturer's standard length.

E. Outside Corners: Job formed.

F. Inside Corners: Job formed.

2.2 VINYL MOLDING ACCESSORY

A. Provide material by same manufacturer as resilient base.

B. Description: Vinyl transition edge for glue-down applications, nosing for carpet, nosing for resilient flooring and joiner for tile and carpet to epoxy and epoxy to rubber as required to terminate flooring materials.

C. Profile and Dimensions: Manufacturer’s standard for intended function.

D. Locations: Provide rubber molding accessories as required for complete finish installations.

E. Colors and Patterns: As selected by Architect from full range of industry colors as required to blend with floor finish color.

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates for Resilient Stair Accessories: Prepare horizontal surfaces according to ASTM F710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
4. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. (18.6 sq. m) and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

    a. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install resilient products until materials are the same temperature as space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Preformed Corners: Install preformed corners before installing straight pieces.

H. Job-Formed Corners:

1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 6 inches (152 mm) in length.

a. Form without producing discoloration (whitening) at bends.

2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 6 inches (152 mm) in length.

a. Miter or cope corners to minimize open joints.

3.4 RESILIENT ACCESSORY INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient accessories.

B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:

1. Remove adhesive and other blemishes from surfaces.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 096513

SECTION 09 65 19 - RESILIENT TILE FLOORING

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. Vinyl composition floor tile.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Verification: Full-size units of each color and pattern of floor tile required.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Floor Tile: Furnish one box of each type, color, and pattern of floor tile installed.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for floor tile installation and seaming method indicated.

1. Engage an installer who employs workers for this Project who are trained or certified by floor tile manufacturer for installation techniques required.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C). Store floor tiles on flat surfaces.

1.9 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive floor tile during the following periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).

C. Close spaces to traffic during floor tile installation.

D. Close spaces to traffic for 48 hours after floor tile installation.

E. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For resilient floor tile, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 VINYL COMPOSITION FLOOR TILE

A. Tile Standard: ASTM F1066, Class 3, surface pattern.

B. Wearing Surface: Smooth.

C. Thickness: 0.125 inch (3.2 mm).

D. Size: 12 by 12 inches (305 by 305 mm).

E. Colors and Patterns: Match Existing.

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.

C. Seamless-Installation Accessories:

D. Floor Polish: Provide protective, liquid floor-polish products recommended by floor tile manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.

3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
4. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. (18.6 sq. m), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install floor tiles until materials are the same temperature as space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

3.3 FLOOR TILE INSTALLATION

A. Comply with manufacturer's written instructions for installing floor tile.

B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

1. Lay tiles in pattern indicated.

C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

1. Lay tiles in pattern of colors and sizes indicated.

D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.

G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in installation areas. Maintain overall continuity of color and pattern between

pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

H. Adhere floor tiles to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.

B. Perform the following operations immediately after completing floor tile installation:

1. Remove adhesive and other blemishes from surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.

C. Protect floor tile from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover floor tile until Substantial Completion.

END OF SECTION 096519

SECTION 09 66 13 – PORTLAND CEMENT TERRAZZO FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Terrazzo Floor System with divider strips.
2. Precast Terrazzo Tile.
3. Precast Terrazzo base.

B. Related Requirements:

1. Section 02 41 19 “Selective Demolition” for terrazzo removal information.
2. Section 07 92 00 "Joint Sealants" for sealants installed with terrazzo.

1.2 DEFINITIONS

A. NTMA: National Terrazzo and Mosaic Association, Inc.

B. SCOF: Static Coefficient of Friction.

C. The Matrix: (also referred to as the binder) The material that acts as the "glue" to hold the aggregates together.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to terrazzo floor system including, but not limited to, the following:

a. Inspect and discuss condition of substrate and other preparatory work performed by other trades.
b. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
c. Review procedures for coping with unfavorable forecasted weather conditions.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include terrazzo installation requirements. Include plans, sections, component details, and relationship to other work. Show layout of the following:

1. Divider strips.
2. Accessory strips.
3. Terrazzo patterns.
4. Precast terrazzo jointing and edge configurations.

C. Samples: For each exposed product and for each color and texture specified, 6 inches (150 mm) in size.

D. Samples for Verification: For each type, material, color, and pattern of terrazzo and accessory required showing the full range of color, texture, and pattern variations expected. Label each terrazzo Sample to identify manufacturer's matrix color and aggregate types, sizes, and proportions. Prepare Samples of same thickness and from same material to be used for the Work, in sizes indicated below:

1. Terrazzo: 6-inch- (150-mm-) square Samples.
2. Precast Terrazzo: 6-inch- (150-mm-) square Samples.
    a. Terrazzo Base
    b. Terrazzo Floor Tiles
3. Accessories: 6-inch- (150-mm-) long Samples of each exposed strip item required.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: NTMA maintenance recommendations and manufacturer’s instructions to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: Engage a terrazzo manufacturer with minimum 5 years documented manufacturing experience producing Portland Cement, binder, and flexible crack isolation membranes.

B. Installer Qualifications: An installer who is a contractor member of NTMA.

C. Precast Terrazzo Flooring Fabricator Qualifications: Shop that employs skilled workers who custom fabricate precast terrazzo flooring products similar to those required for this Project and whose products have a record of successful in-service performance.

D. Precast Terrazzo Flooring Test Reports: Provide test reports for precast terrazzo flooring, for the following tests performed by manufacturer and witnessed by a qualified testing agency:

1. Compressive Strength: ASTM C140.
2. Water Absorption: ASTM C373/ASTM C140.
3. Flexural Strength: ASTM D638.
4. Tensile Strength: ASTM C348.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in supplier's original wrappings and containers, labeled with source's or manufacturer's name, material or product brand name, and lot number if any.

B. Store materials per manufacturer's instructions in their original, undamaged packages and containers, inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures and humidity.

C. Store Portland Cement components in a space where the ambient temperature can be maintained between 60 and 90 deg. F before use.

D. Protect other adjacent work from water and dust generated by grinding operations.

1.9 QUALITY ASSURANCE

A. Source Limitations for Aggregates: Obtain each color, grade, type and variety of granular materials from sources with resources to provide materials of consistent quality in appearance and physical properties.

1.10 FIELD CONDITIONS

A. Environmental Limitations: Maintain interior ambient temperature above 50 deg F (10 deg C) for 48 hours before and during terrazzo installation.

B. Weather Limitations: Proceed with rustic terrazzo installation only when forecasted weather conditions permit work to be performed according to NTMA's written recommendations and when temperatures remain above 45 deg F (7.2 deg C).

C. Field Measurements: Verify actual dimensions of construction contiguous with precast terrazzo by field measurements before fabrication.

D. Provide permanent interior lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during terrazzo installation.

E. Close spaces to traffic during terrazzo installation and for not less than 24 hours after installation unless manufacturer recommends a longer period.

F. Control and collect water and dust produced by terrazzo grinding operations. Protect adjacent construction from detrimental effects of grinding operations.

1.11 WARRANTY TERMS AND DURATIONS

A. Standard Overall Systems Warranty: One 1 year from date of substantial completion.

B. Manufacturer Warranty (Materials): 5 years, for any manufacturing defects like chemical breakdown or discoloration.

C. Installer’s Warranty (Workmanship): 3 years, for any application errors such as improper mixing or poor surface preparation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Master Terrazzo Technologies, 8000 Bristol Pike, Levittown, PA 19057, office@masterterrazzo.com; masterterrazzo.com. and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed or comparable products by the following, provided products are in compliance with the performance criteria:

1. Upstate Terrazzo Restoration Co., 25 South St, A10, Marcellus, NY 13108, 680-223-3539; info@upstateterrazzorestoration.com., upstateterrazzorestoration.com.
2. Zonca Terrazzo & Mosaic, LLC, Armonk, NY,: 100 Business Park Drive, Armonk, NY 10504, 718 655 4040, contact@zoncaterrazzo.com; zoncaterrazzo.com.
3. Terrazzco by Concord Terrazzo Company, 1709 University Commercial Pl, Charlotte, NC 28213, info@terrazzco.com, 704 921 4928; terrazzco.com.

2.2 SOURCE LIMITATIONS

A. Obtain products, including related accessories, from single source from single manufacturer.

2.3 PERFORMANCE REQUIREMENTS

A. NTMA Standards: Comply with NTMA's written recommendations for terrazzo type indicated unless more stringent requirements are specified.

2.4 PORTLAND CEMENT TERRAZZO FLOORING SYSTEM

A. Portland Cement Terrazzo System: As indicated on Drawings

1. Underbed Thickness: As indicated on Drawings

2. Terrazzo Topping Thickness: As indicated on Drawings

B. Materials:

1. Portland Cement: ASTM C150/C150M, Type 1.

a. Color for Terrazzo Matrix: Match Existing.

2. Water: Potable.
3. Sand: ASTM C33/C33M.
4. Aggregates: Comply with NTMA gradation standards for mix indicated and contain no deleterious or foreign matter.

a. Abrasion and Impact Resistance: Less than 40 percent loss per ASTM C131/C131M.
b. 24-Hour Absorption Rate: Less than 0.75 percent.
c. Dust Content: Less than 1.0 percent by weight.

5. Matrix Pigments: Pure mineral or synthetic pigments, alkali resistant, durable under exposure to sunlight, and compatible with terrazzo matrix.

6. Underbed Bonding Agent: Neat Portland Cement paste.

7. Topping Bonding Agent: Neat Portland Cement paste or acrylic bonding agents formulated for use with monolithic terrazzo.

8. Underbed Reinforcement: Galvanized welded-wire reinforcement, wire 2 by 2 inches (51 by 51 mm) by 0.062 inch (1.57 mm) in diameter, complying with ASTM A1064/A1064M, except for minimum wire size.

9. Isolation Membrane: Polyethylene sheeting, ASTM D2103, Type 13300, 4 mils (0.1 mm) thick; or unperforated asphalt felt, ASTM D226/D226M, Type I (No. 15).

2.5 Mixes:

A. Provide standard terrazzo mix according to the following:

1. Underbed Mix: One part Portland Cement to four parts sand and sufficient water to provide workability at as low a slump as possible.
2. Terrazzo Topping Mix: One 94-lb (42.6-kg) bag of Portland Cement per 200 lb (90.7 kg) of aggregate, matrix pigment if required by mix color, and sufficient water to produce a workable mix.

a. Mix Color and Pattern: As selected by Architect from NTMA's "Terrazzo Color Palette" CI Series - Match Existing

2.6 PRECAST TERRAZZO

A. Precast Terrazzo Floor Tiles: Minimum 1/8-inch- (3-mm-) thick, with precast manufacturer's written recommendations for fabricating precast terrazzo tile units in sizes and profiles indicated. Comply with NTMA's written recommendations for fabricating precast terrazzo base units in sizes and profiles indicated.

1. Comply with ASTM D 2047 and ASTM C 1028.
2. Water Based Sealer Properties: With pH factor between 7 and 10.
3. Colors and Patterns: Match Existing.

B. Precast Terrazzo Wall Base: Minimum 3/4-inch-thick, Portland cement terrazzo units with precast manufacturer's written recommendations for fabricating precast terrazzo base units in sizes and profiles indicated.

1. Type: As indicated on drawings.
2. Colors and Patterns: Match Existing.

2.7 MISCELLANEOUS ACCESSORIES

A. Strip Adhesive: As recommended by manufacturer for this use.

B. Anchoring Devices:

1. Strips: Provide mechanical anchoring devices or adhesives for strip materials as recommended by manufacturer and as required for secure attachment to substrate.
2. Precast Terrazzo: Provide mechanical anchoring devices as recommended by fabricator for proper anchorage and support of units for conditions of installation and support.

C. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.

D. Isolation and Expansion-Joint Material: Closed-cell polyethylene foam, nonabsorbent to liquid water and gas, and non-outgassing in unruptured state; butyl rubber; rubber; or cork; in width indicated minimum 1/2 inch (12.7 mm) wide.

E. Portland Cement Terrazzo Cleaner: Chemically neutral cleaner with pH factor between 7 and 10 that is biodegradable, phosphate free, and recommended by cleaner manufacturer for use on terrazzo type indicated.

F. Sealer: Slip- and stain-resistant, penetrating-type sealer that is chemically neutral; does not affect terrazzo color or physical properties; is recommended by sealer manufacturer; and complies with NTMA's written recommendations for terrazzo type indicated.

1. Surface Friction: Not less than 0.6 according to ASTM D2047.
2. Acid-Base Properties: With pH factor between 7 and 10.

G. Divider Strips: Standard Divider Strips:

1. Material: Match Existing.
2. One-piece, flat-type strips for grouting into sawed joints prepared in substrate.
3. Strip Thickness: 16 gauge.
4. Type: “L” strip: 3/8 inch by 1/2 inch.
5. Heavy Top Thickness: 1/8 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Slab Flatness Tolerances: Subfloor is not to vary more than 1/4 inch from true plane in a 10 foot span.

C. Cracks: Locate cracks and joints in concrete substrates. Verify location of control joints and expansion joints, if any, in terrazzo flooring.

D. Proceed with installation only after unsatisfactory conditions, including levelness tolerances, have been corrected.

3.2 PREPARATION

A. Clean substrates of substances, including oil, grease, and curing compounds, that might impair terrazzo bond. Provide clean, dry, and neutral substrate for terrazzo application.

1. Mechanically abrade and roughen concrete substrates before installing terrazzo system according to NTMA's written recommendations.
2. Broom clean area to receive terrazzo to remove loose chips and all foreign matter.

B. Protect other work from water and dust generated by grinding operations. Control water and dust to comply with environmental protection regulations.

1. Erect and maintain temporary enclosures and other suitable methods to limit water damage and dust migration and to ensure adequate ambient temperatures and ventilation conditions during installation.
2. Prime subfloor in accordance with manufacturer's recommendations.
3. Proportion and thoroughly blend the materials.
4. Place mixture to achieve specified thickness.
5. Provide mix color for terrazzo base to match approved sample.

3.3 INSTALLATION, GENERAL

A. Comply with NTMA's written recommendations for terrazzo and accessory installation.

1. Installation Tolerance: Limit variation in terrazzo surface from level to 1/4 inch in 10 feet (6.4 mm in 3 m); noncumulative.

B. Strips:

1. Divider and Control-Joint Strips:

a. Locate divider strips in locations indicated.
b. Install strips in adhesive setting bed without voids below strips, or mechanically anchor strips as required to attach strips to substrate, as recommended by strip manufacturer.

2. Expansion-Joint Strips: Form expansion joints using divider strips and install directly above concrete-slab expansion joints.
3. Accessory Strips: Install as required to provide a complete installation.

3.4 PORTLAND CEMENT TERRAZZO FLOORING INSTALLATION

A. Underbed Preparation:

1. Sand-Cushion Portland Cement Terrazzo: Saturate underbed with water to produce a cement slurry.
2. Bonded Portland Cement Terrazzo: Dampen underbed with water.

B. Monolithic Portland Cement Terrazzo: Apply topping bonding agent on concrete substrate.

C. Place terrazzo mixture in panels formed by divider strips and trowel mixture to top of strips. Seed additional aggregates in matrix to uniformly distribute granular material and produce a surface with a minimum of 70 percent aggregate exposure. Roll and compact surface until excess cement and water have been extracted.

1. Portland Cement Terrazzo: Trowel to a dense, uniform, flat surface disclosing lines of divider strips.

D. Portland Cement Terrazzo Base: Install and finish base at the same time that adjacent flooring is installed.

E. Portland Cement Terrazzo Finishing:

1. Rough Grinding:

a. Cover terrazzo topping with moisture-retaining cover and cure until topping develops sufficient strength to prevent lifting or pulling of aggregate during grinding.

b. Rough Grinding: Grind with 24 or finer grit stones or with comparable diamond abrasives.
c. Follow initial grind with 60/80 grit stones or with comparable diamond abrasives.

2. Grouting:

a. After rough grinding, clean terrazzo topping with water and rinse away residue.
b. Remove excess rinse water, apply matrix mix to grout surface, and fill voids.
c. After grouting, cover surface with moisture-retaining cover to cure grout until ready for fine grinding.

3. Fine Grinding/Polishing: Grind with 120 grit or with comparable diamond abrasives until all grout is removed from surface.

3.5 PRECAST TERRAZZO INSTALLATION

A. Set units using method recommended by NTMA and by Portland Cement Terrazzo Flooring manufacturer unless otherwise indicated.

B. Set units with alignment level and true to dimensions, varying 1/8 inch (3.2 mm) maximum in length, height, or width.

3.6 REPAIR

A. Cut out and replace terrazzo areas that lack bond with substrate or underbed, including areas that emit a "hollow" sound if tapped. Cut out terrazzo areas in panels defined by strips and replace to match adjacent terrazzo, or repair panels according to NTMA's written recommendations, as approved by Architect.

3.7 CLEANING AND PROTECTION

A. Terrazzo Cleaning:

1. Remove grinding dust from installation and adjacent areas.
2. Wash surfaces with cleaner immediately after final cleaning of terrazzo flooring according to both NTMA's and manufacturer's written recommendations and manufacturer's written instructions; rinse surfaces with water and allow them to dry thoroughly.

B. Sealing:

1. Seal surfaces according to NTMA's written recommendations.
2. Apply sealer according to sealer manufacturer's written instructions.

C. Protection: Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure that terrazzo is without damage or deterioration at time of Substantial Completion.

END OF SECTION 096613

SECTION 09 91 13 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Surface preparation of exterior substrates and application of the following:

1. Primers.
2. Water-based finish coatings.

B. Related Requirements:

1. Section 099123 "Interior Painting."

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include preparation requirements and application instructions.
2. Indicate VOC content.

B. Samples: For each type of topcoat product.

C. Samples for Initial Selection: For each type of topcoat product.

D. Samples for Verification: For each type of paint system and each color and gloss of topcoat. Submit paint manufacturer's standard printed cards for verification Samples.

1. Submit Samples on rigid backing, 8 inches (200 mm) square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

E. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in applicable exterior painting schedule articles to cross-reference paint systems specified in this Section. Include color designations.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.

2. Remove rags and waste from storage areas daily.

1.4 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Coatings and Related Materials as specified and indicated on drawings that are manufactured by: Sherwin-Williams, 101 W. Prospect Ave., Cleveland, OH 44115, coatings@sherwin.com: 216 566 2000; www.sherwin-williams.com and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed or comparable products by the following, provided products are in compliance:

1. Benjamin Moore & Co., 101 Paragon Drive, Montvale, NJ 07645, info@benjaminmoore.com; www.benjaminmoore.com.
2. PPG Industries, One PPG Place, Pittsburgh, PA 15272, | 855 724 6802, corporateinfo@ppg.com,412 434 3131, www.ppg.com.

2.2 SOURCE LIMITATIONS

A. Obtain all coating products from single manufacturer.

2.3 EXTERIOR PAINTS, GENERAL

A. Exterior Paints: Subject to compliance with requirements, provide product listed in product types below and applicable exterior painting schedule articles for the paint category indicated.

B. Material Compatibility:

1. Materials for use within each paint system must be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by topcoat manufacturer for use in paint system and on substrate indicated.

C. Colors: As selected by Architect from manufacturer's full range to Match Existing.

2.4 PRIMERS

A. Alkali-Resistant, Water-Based Primer: Water-based primer formulated for use on alkaline substrates.

B. Zinc-Rich, Inorganic Primer: Corrosion-resistant, inorganic-based, zinc-rich primer formulated for use on prepared ferrous metal substrates subject to severe industrial or marine environments.

2.5 WATER-BASED FINISH COATINGS

A. Exterior Latex Paint: Water-based, pigmented coating; formulated for alkali, mold, microbial, and water resistance and for use on exterior substrates.

1. Gloss and Sheen: Manufacturer's standard low sheen.

B. Exterior, Water-Based Alkyd Paint: Water-based, pigmented, low-VOC alkyd paint formulated for flash rust and water resistance and for use on exterior substrates.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

3.2 PREPARATION

A. Comply with manufacturer's written instructions applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems specified in this Section.
2. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.
3. Sand surfaces that will be exposed to view and remove sanding dust.

4. Prime edges, ends, faces, undersides, and backsides of wood.

3.3 APPLICATION OF EXTERIOR PAINT PRODUCTS

A. Apply paints in accordance with manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
3. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
4. Primers specified in applicable exterior painting schedule articles may be omitted on items that are factory primed or factory finished if compatible with intermediate and topcoat coatings and acceptable to intermediate and topcoat paint manufacturers.

B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

1. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
2. Allow empty paint cans to dry before disposal.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 EXTERIOR PAINTING SCHEDULE, CONCRETE SUBSTRATES

A. Steel and Iron Substrates:

1. Water-Based Light Industrial Coating System

a. Prime Coat: Shop primer specified in Section where substrate is specified.
b. Intermediate Coat: Light industrial coating matching topcoat.
c. Topcoat: Light industrial coating, exterior, water based (MPI Gloss Level 5).

1) Sherwin-Williams – DTM Acrylic Semi-Gloss, B66W01151 Series, 6.0 - 10.0 mils wet, 2.5 - 4.0 mils dry. (MPI #163)

END OF SECTION 09 91 13

SECTION 09 91 23 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Surface preparation of interior substrates and application of the following:

1. Primers.
2. Water-based finish coatings.
3. Dry fall coatings.

B. Related Requirements:

1. Section 099113 "Exterior Painting."

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include preparation requirements and application instructions.
2. Indicate VOC content.

B. Samples: For each type of topcoat product.

C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

1. Apply coats on Samples in steps to show each coat required for system.
2. Label each coat of each Sample.
3. Label each Sample for location and application area.

D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in applicable interior painting schedule articles to cross-reference paint systems specified in this Section. Include color designations.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.4 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures of less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Coatings and Related Materials as specified and indicated on drawings that are manufactured by: *Sherwin-Williams*, 101 W. Prospect Ave., Cleveland, OH 44115, coatings@sherwin.com: 216 566 2000; www.sherwin-williams.com and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed or comparable products by the following, provided products are in compliance:

1. *Benjamin Moore & Co*., 101 Paragon Drive, Montvale, NJ 07645, info@benjaminmoore.com; www.benjaminmoore.com.
2. *PPG Industries*, One PPG Place, Pittsburgh, PA 15272, | 855 724 6802, corporateinfo@ppg.com,412 434 3131, www.ppg.com.

2.2 SOURCE LIMITATIONS

A. Obtain all coating products from single manufacturer.

2.3 INTERIOR PAINTS, GENERAL

A. Material Compatibility:

1. Materials for use within each paint system must be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by topcoat manufacturer for use in paint system and on substrate indicated.

B. Colors: As selected by Architect from manufacturer's full range.

2.4 PRIMERS

A. Alkali-Resistant, Water-Based Primer: Water-based primer formulated for use on alkaline substrates

B. Interior, Institutional Low-Odor/VOC Primer Sealer: Water-based primer sealer with low-odor characteristics and a VOC of less than 10 grams per liter for use on new interior plaster and gypsum wallboard surfaces that are subsequently to be painted with latex finish coats.

C. Water-Based Alkyd Primer Sealer: Waterborne-emulsion primer/sealer formulated for new interior gypsum board and plaster substrates.

D. Water-Based, Rust-Inhibitive Primer: Corrosion-resistant, water-based-emulsion primer; formulated for resistance to flash rusting when applied to cleaned, ferrous metal substrates subject to mildly corrosive environments.

E. Quick-Drying, Alkyd Metal Primer: Corrosion-resistant, solvent-based, modified-alkyd primer; lead and chromate free; formulated for quick-drying capabilities and for use on cleaned, ferrous metal substrates.

F. Surface-Tolerant Metal Primer: Corrosion-resistant, solvent-based metal primer formulated for use on structural steel and metal fabrications that have been minimally prepared.

G. Water-Based, Galvanized-Metal Primer: Corrosion-resistant, pigmented, acrylic primer; formulated for use on cleaned/etched galvanized metal substrates to prepare it for subsequent water-based coatings.

H. Quick-Drying Aluminum Primer: Corrosion-resistant, solvent-based, alkyd or modified-alkyd primer formulated for quick-drying capabilities and for use on prepared aluminum substrates.

2.5 WATER-BASED FINISH COATINGS

A. Manufacturer Product Line: Provide Sherwin Williams, Benjamin Moore or PPG Industries line of finishes.

B. Interior Latex Flat Paint: Pigmented, water-based coating for use on interior primed/sealed plaster and gypsum board, and on primed metals.

1. Gloss and Sheen Level: Manufacturer's standard flat finish.

C. Interior, Latex, Eggshell: Pigmented, water-based paint for use on primed/sealed interior plaster and gypsum board, and on primed metals.

1. Gloss and Sheen Level: Manufacturer's standard eggshell finish.

D. Interior, Latex, Satin: Pigmented, water-based paint for use on primed/sealed interior plaster and gypsum board, and on primed metals.

1. Gloss and Sheen Level: Manufacturer's standard low-sheen finish.

E. Interior, Latex, Semigloss: Pigmented, water-based paint for use on primed/sealed interior plaster and gypsum board, and on primed metals.

1. Gloss Level: Manufacturer's standard semigloss finish.

2.6 DRY FALL COATINGS

A. Dry Fall, Latex: Pigmented, water-based, emulsion-type, fast-drying coating for use on interior plaster, concrete, gypsum board and primed metal ceilings.

1. Gloss and Sheen Level: Manufacturer's standard flat.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Gypsum Board: 12 percent. Verify that finishing compound is dry and sanded smooth.
2. Plaster: 12 percent. Verify that plaster is fully cured.

C. Verify suitability of substrates, including surface conditions and compatibility, with finishes and primers. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Steel Substrates: Remove loose rust, loose mill scale, loose shop primer, and other loose foreign matter. Clean substrate using methods recommended in writing by paint manufacturer in compliance with SSPC-SP 2 or SSPC-SP 3.

E. Galvanized Metal Substrates: Remove grease and oil residue from galvanized metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

F. Aluminum Substrates: Remove loose surface oxidation.

3.3 APPLICATION OF INTERIOR PAINT PRODUCTS

A. Apply paints in accordance with manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
3. Primers specified in the applicable interior painting schedule articles may be omitted on items that are factory-primed or factory-finished if compatible with intermediate and topcoat coatings and acceptable to intermediate and topcoat paint manufacturers.

B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering waterways, sanitary and storm drain systems, and ground.
2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
3. Allow empty paint cans to dry before disposal.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 INTERIOR PAINTING SCHEDULE

A. Steel Substrates:

1. Latex System (previously primed items):

a. Prime Coat: Shop primer specified in Section where substrate is specified.
b. Intermediate Coat: Latex, interior, matching topcoat.
c. Topcoat: Latex, interior, semi-gloss (MPI Gloss Level 5).

1) Sherwin-Williams - Industrial Acrylic Semi-Gloss Coating, B66-650 Series, at 2.5 to 4.0 mils dry, per coat.

2. Latex System (un-primed items):

a. Prime Coat: Primer, rust-inhibitive, water based.

1) Sherwin-Williams - Pro Industrial Pro-Cryl Universal Primer, B66-310 Series, at 5.0 to 10 mils wet, 2.0 to 4.0 mils dry.

b. Intermediate Coat and Topcoat: Same as previously primed finish above.

3. Water-Based Dry-Fall System (for overhead structural steel, and exposed mechanical / electrical items):

a. Prime Coat: Shop primer specified in Section where substrate is specified.
b. Intermediate Coat: Dryfall, Latex, interior, matching topcoat.
c. Topcoat: Dry-fall latex, flat.

B. Gypsum Board and Plaster Substrates:

1. Institutional Low-Odor/VOC Latex over Latex Sealer System (Walls):

a. Prime Coat: Primer sealer, latex, interior.

1) Sherwin-Williams - ProMar 200 Zero VOC Interior Latex Primer, B28W2600, at 4.0 mils wet, 1.5 mils dry.

b. Intermediate Coat: Latex, interior, matching topcoat.

c. Topcoat: Latex, interior (MPI Gloss Level 3).

1) Sherwin-Williams - S-W ProMar 200 Zero VOC Latex Eggshell, B20W2651 Series, at 4.0 mils wet, 1.7 mils dry, per coat.

2. Institutional Low-Odor/VOC Latex over Latex Sealer System (Ceilings and Overhead):

a. Prime Coat: Primer sealer, latex, interior.

1) Sherwin-Williams - Pro Industrial Waterborne Acrylic Dryfall Flat, B42-80 Series, at 6.0 mils wet, 1.7 mils dry
2) Intermediate Coat: Latex, interior, matching topcoat.

a. Topcoat: Latex, interior (MPI Gloss Level 1 Flat).

1) Sherwin-Williams - Pro Industrial Waterborne Acrylic Dryfall Flat, B42-80 Series, at 6.0 mils wet, 1.7 mils dry.

END OF SECTION 09 91 23

SECTION 12 24 13 - ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Manually operated, single-roller shades.
2. Complete wired motorized single-roller shade system.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for wood blocking and grounds for mounting roller shades and accessories.
2. Section 079200 "Joint Sealants" for sealing the perimeters of installation accessories for light-blocking shades with a sealant.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product

1. Include construction details, material descriptions, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.
2. Include operating characteristics, and furnished accessories.

B. Shop Drawings:

1. Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations.
2. Show electrical wiring and mounting for motorized shades.

C. Samples for Verification for each type of roller shade.

1. Manufacturer's standard color sheets, showing full range of available colors for each type and color of shade-band material and for each type of exposed finish.
2. Include Samples of accessories involving color selection.

D. Product Schedule: For roller shades.

1. Use same designations indicated on Drawings.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Statements: For Installer.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For roller shades to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Comply with NFPA 701 for flame retardancy

B. Installer Qualifications:

1. Entity that employs installers and supervisors who are trained and approved by manufacturer in roller shade installation.
2. Installer must have 5 years minimum experience in roller shade installation.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of products that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Defects in materials and workmanship beyond normal wear and tear.
b. Faulty operation of operating system components.
c. Deterioration of fabric beyond normal use.

2. Warranty Period:

a. Roller Window Shades: Five years from date of Substantial Completion.

b. Fabric: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Roller Window Shades by Mecho, (MechoShade Systems LLC), 42-03 35th Street, Long Island City, NY 11101, 718 729 2020, marketingcommunications@mechoshade.com, and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed for comparable products by the following, provided products are in compliance with the performance criteria:

1. Hunter Douglas, 55 West 46th Street, 27th Floor, New York, NY 10036, 845 664 7000; hunterdouglas.com.
2. Draper, Inc., 411 South Pearl St., Spiceland, IN 47385, 800 238 7999; draperinc.com.

2.2 SOURCE LIMITATIONS

A. Obtain roller shades from single source from single manufacturer.

2.3 PERFORMANCE REQUIREMENTS

A. Window Covering Safety Standard: Provide roller window shades that comply with WCMA A100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.

B. Fire Performance: Tested in accordance with and meeting the flame propagation performance criteria of Test 1 or Test 2, as appropriate, of NFPA 701; testing by a qualified testing agency. Identify products with appropriate markings from an applicable testing agency.

C. Accessibility Standards: Comply with applicable provisions in ICC A117.1 for roller window shades designated as accessible.

2.4 MANUALLY OPERATED SINGLE-ROLLER WINDOW SHADES (University Union)

A. Shadeband Fabrics: light-filtering, antistatic, flame retardant, bacteria-resistance rated, fade and stain resistant.

1. Fabrics to be composed of polyester yarn, fiberglass yarn, Thermoplastic-Olefin, acrylic coating, vinyl laminates, vinyl coatings, or cotton, or a combination of those listed.
2. Finish: Match existing from manufacturer’s full range of colors as approved by architect.
3. Bottom (Hem) Bar: Steel or extruded aluminum.

    a. Color and Finish: Match Existing from manufacturer's full range as approved by Architect.

4. Rollers: Circular-shaped, Corrosion-resistant extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.

    a. Roller Drive-End Location: Right side of interior face of shade unless otherwise noted or required.
    b. Direction of Shadeband Roll: Regular, from back (exterior face) of roller.
    c. Shadeband-to-Roller Attachment: Manufacturer's standard method

5. Mounting Hardware: Manufacturer’s standard 0.07-inch nickel-plated C1008/1010 cold rolled steel. End plug bracket shall have a lock-down retainer device. are Reversible b rackets for right- or left-hand installation. Provide corrosion-resistant endcap covers where exposed that are compatible with roller assembly, operating mechanism, installation accessories, and installation location and conditions indicated.

6. Installation Accessories:

    a. Front Fascia: Aluminum extrusion that conceals front and underside of roller and shadeband assembly and attaches to roller endcaps without exposed fasteners.

        1) Color and Finish: Match Existing from manufacturer's full range as approved by Architect.

    b. Side Channels: Extruded aluminum "'U" channel with light seals.

        1) Provide side channels with shadeband guides or other means of aligning shadebands with channels at tops.
        2) Color and Finish: Match Existing from manufacturer's full range as approved by Architect.

B. Manual Cordless Operation:

1. Crank-and-Gear Operating Mechanisms: Sealed, bi-directional gearbox drive system controlled by crank handle.

    a. Crank-Handle:
    b. Type: Detachable-mounted.
    c. Length: Manufacturer's standard

2.5 MOTORIZED OPERATION (Bartle Library)

A. Motor-operated single-roller window shades.

1. Motorized Operating System to match existing system

2. Motorized Operating Systems: Factory-assembled, motorized roller window shades with shade-operator system of size and capacity and with features, characteristics, and accessories required for conditions indicated, complete with motor and factory-prewired

motor controls, power disconnect switch, enclosures protecting controls and operating parts, and accessories required for complete operation. For wired controls, include wiring from motor controls to motors. Coordinate operator wiring requirements and electrical characteristics with building electrical system.

B. Type:

1. Standard Motor with Wired Controls: Roller window shade manufacturer's standard tubular motor to suit conditions indicated, enclosed in roller.

a. Motor Electrical Characteristics: 120-V ac or 24-V dc Coordinate and field verify existing controller characteristics.
b. Motor Functions:

1) Quiet Operation Motor:

c. Controls:

1) Wired Wall Switch:

a) Single Motor Control: Wired wall-switch-operated control station for single motor control, with three switch positions for open, close, and center stop functions. Field verify.
b) Color: Match Existing from manufacturer's full range as approved by Architect.

2.6 SHADEBAND MATERIALS

A. As specified in this section, see Article 2.4.

1. Thickness: 0.025 inches
2. Weight: 11.3 oz./sq. yd.
3. Roll Width: Field verify to fit within existing openings.
4. Orientation on Shadeband: Up the bolt.
5. Openness Factor:

a. Manual Control Shades: 3 percent.
b. Motorized Shades: 0.5 percent.

B. Color: Match Existing from manufacturer's full range as approved by Architect

2.7 FABRICATION

A. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F (23 deg C):

1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4-inch (6 mm) per side or 1/2-inch (13-mm) total, plus or minus 1/8 inch (3.1 mm). Length equal to head-to-sill or -floor dimension of opening in which shade is installed less 1/4 inch (6 mm), plus or minus 1/8 inch (3.1 mm).

B. Fabricate shade fabrics without battens or seams to extent possible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ROLLER WINDOW SHADE INSTALLATION

A. Install roller shades level, plumb, aligned and centered on openings, and aligned with adjacent units in accordance with manufacturer's written instructions.

1. Located so shadeband is not closer than 2 inches to interior face of glass. Allow clearances for window operation hardware.

B. Roller Shade Locations: As indicated on Drawings.

C. Electrical:

1. Connect motor-operated roller window shades to building electrical system.
2. Comply with manufacturer's written installation instructions.

3.3 ADJUSTING

A. Adjust and balance roller window shades to operate smoothly, easily, safely, and free from binding or malfunction through full operational range.

3.4 CLEANING AND PROTECTION

A. Clean roller window shade surfaces, after installation, in accordance with manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller window shades are without damage or deterioration at time of Substantial Completion.

C. Protect electrical wiring, cabling, raceways, and boxes, after installation. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use, before time of substantial completion.

D. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION 122413

SECTION 123623 - PLASTIC-LAMINATE-CLAD COUNTERTOPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plastic-laminate-clad countertops.
2. Accessories.

B. Related Requirements:

1. Section 064100“Architectural Wood Casework” For Associated Cabinets Supporting Counters.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product including high-pressure decorative laminate and adhesive for bonding plastic laminate

B. Shop Drawings:

1. Plans, sections, details, edge and backsplash profiles, and attachments to other work.
2. Locations and details of joints.
3. Locations and sizes of cutouts and holes for items installed in countertop.
4. Apply AWI's Quality Certification Program label to Shop Drawings.

C. Samples for Verification:

1. Plastic Laminates: For each type, color, pattern, and surface finish required, 8 by 10 inches (200 by 250 mm) in size.
2. Fabrication Sample: For each type and profile of countertop required, provide one sample applied to core material with specified edge material applied to one edge.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Indicate locations and sizes of cutouts and holes for items installed in countertop and backsplashes.

B. Product Certificates: For the following:

1. Composite wood and agrifiber products.
2. High-pressure decorative laminate.

3. Adhesives.

C. Qualification Statements:

1. Installer.
2. Fabricator

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications:

1. Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Installer Qualifications:

1. Entity that employs installers and supervisors who are trained and approved by manufacturer in plastic-laminate-clad countertop installation.
2. Installer must have 5 years minimum experience in plastic-laminate-clad countertop installation.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver countertops only after casework and supports on which they will be installed have been completed in installation areas.

B. Store countertops in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

C. Keep surfaces of countertops covered with protective covering during handling and installation.

1.6 FIELD CONDITIONS

A. Environmental Limitations with Humidity Control: Do not deliver or install countertops until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F (16 and 32 deg C) and relative humidity between 25 and 55 percent during the remainder of the construction period.

B. Field Measurements: Where countertops are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-CLAD COUNTERTOPS

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades indicated for construction, installation, and other requirements.

1. Provide inspections of fabrication and installation together with labels and certificates from AWI certification program indicating that countertops comply with requirements of grade specified.
2. The Contract Documents contain requirements that are more stringent than that of the referenced quality standard. Comply with requirements of the Contract Documents in addition to those of referenced quality standard.
3. Grade: Premium.

B. High-Pressure Decorative Laminate: ISO 4586-3, Grade HGS.

C. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. As indicated by manufacturer's designations.
2. Grain Direction: Parallel to cabinet fronts

D. Edge Treatment: As indicated on Drawings.

E. Core Material: Exterior-grade BC plywood.

F. Core Material at Sinks: Exterior-grade BC plywood.

G. Core Thickness: 3/4 inch (19 mm).

1. Build up countertop thickness to 1-1/2 inches (38 mm) at front, back, and ends with additional layers of core material laminated to top.

H. Backer Sheet: Provide plastic-laminate backer sheet, ISO 4586-3, grade to match exposed surface, on underside of countertop substrate.

2.2 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard unless otherwise indicated.

1. Wood Moisture Content: 5 to 10 percent.

B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated. Provide exterior-grade products where specified.

1. Medium-Density Fiberboard: ANSI A208.2, Grade 130.
2. Softwood Plywood: DOC PS 1.

2.3 ACCESSORIES

A. Grommets:

1. Wire-Management Grommets: Circular, grommets and matching caps with slot for wire passage.
2. Basis of Design Product: Mockett & Co., Inc. – TM1.
3. Finish: Matte black.

2.4 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard unless otherwise indicated.

B. Composite Panel Products: Provide materials that comply with requirements of referenced quality standard for each type of countertop and quality grade specified unless otherwise indicated.

C. Fire-Retardant MDF: MDF panels complying with ANSI A208.2, made from softwood fibers, synthetic resins, and fire-retardant chemicals mixed together at time of panel manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 200 or less in accordance with ASTM E84.

2.5 MISCELLANEOUS MATERIALS

A. Adhesive for Bonding Plastic Laminate: Type I, waterproof type as selected by fabricator to comply with requirements.

1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

B. Installation Adhesive: Manufacturer's standard product that is recommended for application indicated.

2.6 FABRICATION

A. Fabricate countertops to dimensions, profiles, and details indicated. Provide front and end overhang of 1 inch (25 mm) over base cabinets. Ease edges to radius indicated for the following:

1. Solid-Wood (Lumber) Members: 1/16 inch (1.5 mm) unless otherwise indicated.

B. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

1. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended, and check measurements of assemblies against field measurements before disassembling for shipment.

C. Shop cut openings to maximum extent possible to receive appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

1. Seal edges of cutouts by saturating with varnish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates to receive countertops and conditions under which countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of countertops.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Before installation, condition countertops to average prevailing humidity conditions in installation areas.

B. Examine shop-fabricated work for completion and complete work as required, including removal of packing.

C. Field Measurements: Where countertops are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

D. Before installing countertops, examine shop-fabricated work for completion and complete work as required, including removal of packing and back-priming.

3.3 INSTALLATION

A. Assemble countertops and complete fabrication at Project site to extent that it was not completed in the shop.

1. Provide cutouts for appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

B. Install concealed wall brackets lag bolted to side of wood blocking nested within stud cavity as directed by manufacturer to maintain indicated tolerances. Space at 32 inches (810 mm) on center or as indicated on drawings.

C. Grade: Install countertops to comply with same grade as item to be installed and per HCR Guidelines.

D. Field Jointing: Where possible, make in the same manner as shop jointing, using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be joined in shop so Project-site processing of top and edge surfaces is not required. Locate field joints where indicated on Shop Drawings.

1. Secure field joints in plastic-laminate countertops with concealed clamping devices located within 6 inches (150 mm) of front and back edges and at intervals not exceeding 24 inches (600 mm). Tighten according to manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.
2. Install concealed wall brackets lag bolted to side of wood blocking nested within stud cavity as directed by manufacturer to maintain indicated tolerances. Space at 32 inches (810 mm) on center or as indicated on drawings.
3. Scribe and cut countertops to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
4. Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
5. Anchor wall cleating necessary for proper setting for countertops not supported by casework.
6. Install countertops level and true in line. Use concealed shims as required to maintain not more than 1/8-inch-in-96-inch (3-mm-in-2400-mm) variation from a straight, level plane.
7. Secure backsplashes to tops with concealed metal brackets at 16 inches (400 mm) o.c. and to walls with adhesive.
8. Seal joints between countertop and backsplash, if any, and joints where countertop and backsplash abut walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.

3.4 FIELD QUALITY CONTROL

A. Inspections: Provide inspection of installed Work through AWI's Quality Certification Program certifying that woodwork, including installation, complies with requirements of the referenced standard for the specified grade.

1. Inspection entity is to prepare and submit report of inspection.

3.5 ADJUSTING AND CLEANING

A. Repair damaged and defective countertops, where possible, to eliminate functional and visual defects. Where impossible to repair, replace countertops. Adjust joinery for uniform appearance.

B. Clean countertops on exposed and semi-exposed surfaces.

C. Protection: Provide kraft paper or other suitable covering over countertop surfaces, taped to underside of countertop at a minimum of 48 inches (1220 mm) o.c. Remove protection at Substantial Completion.

END OF SECTION 123623.13

SECTION 12 48 13 - ENTRANCE FLOOR MATS AND GRIDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Recessed Grids and carpet inserts.

B. Related Sections

1. Section 09 65 19 “Resilient Tile Flooring” for adjacent construction that creates recesses.
2. Section 08 71 00 “Door Hardware” for door bottoms and sweeps that require coordination with walk-off mats.

1.2 COORDINATION

A. Coordinate size and location of recesses in concrete or terrazzo that is scheduled to receive floor mats.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for floor mats and frames.

B. Shop Drawings:

1. Items penetrating floor mats and frames, including door control devices.
2. Divisions between mat sections.
3. Perimeter floor frames.

C. Samples: For the following products, in manufacturer's standard sizes:

1. Floor Mat: Assembled sections of floor mat.
2. Frame Members: Sample of each type and color.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance grids
Data: For floor mats and to be included in maintenance manuals.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: OBEX MONO/11 mm C manufactured by: Milliken & Company, 920 Milliken Road, Spartanburg, South Carolina 29303, 864 503 2020, isf@milliken.com; www.milliken.com, and related materials herein specified and indicated on the drawings, subject to compliance with requirements listed or comparable products by the following, provided products are in compliance with the performance criteria:

1. Construction Specialties (CS), 3 Werner Way, Suite 100, Lebanon, NJ 08833, 800 233 8493; CET@c-sgroup.com; c-sgroup.com.
2. Forbo Flooring System, 8 Maplewood Drive, Humboldt Industri
al Park, Hazleton, PA 18202, 800 842 7839, info.na@forbo.com; forbo.com/flooring.

2.2 ENTRANCE FLOOR MATS AND GRIDS, GENERAL

A. Structural Performance: Provide roll-up rail mats and frames capable of withstanding the following loads and stresses within limits and under conditions indicated:

1. Uniform floor load of 300 lbf/sq. ft. (14.36 kN/sq. m).
2. Wheel load of 350 lb (159 kg) per wheel.

B. Accessibility Standard: Comply with applicable provisions in ICC A117.1

2.3 MODULAR GRID

A. Grid Type:

1. Grid Material: 100% UV-Resistant PVC
2. Grid Size: Nominal: 7.87" x 7.87" (200 mm x 200 mm).
3. Total Nominal Thickness: 11 mm (0.43").
4. Grid Color: Black
5. Nominal Total Weight: 23.8 oz/ft² (7,275 g/m²)
6. Flammability (Radiant Panel ASTM-E-648): ≥ 0.45 (Class I).
7. Rolling Load (ASTM F2753): No noticeable deformation or damage to the structural integrity with a 400 pound per wheel at 2,500 cycles with load applied to a 200 mm diameter, 32 mm wide rubber tread castor.

B. Yarn Inserts:

1. Material: Tufted, Cut-Pile ECONLY Nylon Monofilament Type 6.
2. Color: Dark Grey

2.4 FABRICATION

A. Wherever possible, coordinate the overall dimension of the modular tiles with the dimensions of the recesses to avoid cutting the grid tiles. Cut grid tiles to fit the recess in the floors only as a last resort.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and floor conditions for compliance with requirements for location, sizes, minimum recess depth, and other conditions affecting installation of floor mats and frames.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install recessed mats to comply with manufacturer's written instructions so that tops of mats will be flush with adjoining finished flooring. Set mats with tops at height recommended by manufacturer for most effective cleaning action; coordinate tops of mat surfaces with bottoms of doors that swing across mats to provide clearance between door and mat.

1. For installation in terrazzo flooring areas, allow for grinding and polishing of terrazzo without grinding surface of recessed frames. Coordinate with other trades as required.
2. Install necessary shims, spacers, and anchorages for proper location, and secure attachment of frames.
3. Install grout and fill around frames and, if required to set mat tops at proper elevations, in recesses under mats. Finish grout and fill smooth and level.
4. Delay setting mats until construction traffic has ended.

3.3 PROTECTION

A. After completing frame installation and concrete work, provide temporary filler of plywood or fiberboard in recesses and cover frames with plywood protective flooring. Maintain protection until construction traffic has ended and Project is near Substantial Completion.

END OF SECTION 124813

SECTION 21 00 10 - GENERAL REQUIREMENTS FOR FIRE SUPPRESSION

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 the Work of this Division.

1. The intent of this Section is to complement Division 01 Specifications and to provide supplementary, trade-specific information.
2. Refer conflicting requirements to Architect for a decision before proceeding. If a resolution is not obtained, assume the costliest to apply.

B. Thoroughly study all Architectural, HVAC, Plumbing, Electrical, Fire Suppression, Structural, and Site Drawings and Specifications before submitting bids.

C. Drawings and Specifications are to be considered as supplementing each other. Work specified but not shown or shown but not specified shall be performed or furnished as though mentioned in both Specifications and Drawings.

D. Details on Drawings are to be considered typical for similar applications unless specifically noted otherwise.

1.2 SUMMARY

A. Bid shall include the cost of all labor, materials, tools, transportation, equipment, insurance, temporary protection, rentals, permits, taxes, and all necessary and miscellaneous items required to provide various systems shown and described complete and in good operating condition whether or not these miscellaneous items are specifically described in the Specifications or shown on the Drawings.

B. Install all work in accordance with all applicable codes and prepare supplemental detail drawings and Shop Drawings reflecting purchased equipment requirements as necessary to obtain approval of authorities having jurisdiction over this Project.

C. Guarantee workmanship, materials, and performance of this Division's systems [in accordance with the requirements of the Contract Documents**.**

D. The following are specifically included without limiting the generality implied by the Drawings or Specifications:

1. Apply firestopping to penetrations of fire-rated construction, to restore original fire-resistance rating of assembly, and as indicated in this Division's Specifications. Comply with requirements in Division 07 Section "Penetration Firestopping."
2. Submittal of forms and Drawings to review and permit agencies.

3. Submittals.
4. Record Documents.
5. Permits and Inspections: Apply for and obtain all required permits and inspections in accordance with Division 01; pay all related fees and charges

1.3 ALLOWANCES

A. Refer to Division 01 Specifications.

1.4 UNIT PRICES

A. Refer to Division 01 Specifications.

1.5 PROJECT MANAGEMENT AND COORDINATION

A. General Requirements:

1. Drawings show general design arrangement; install work substantially as indicated. Verify exact location and elevations on job. DO NOT SCALE DRAWINGS.
2. Due to small scale of Drawings, it is not possible to indicate all offsets, fittings, changes in elevation, interferences, etc. Adjust installation of piping, ductwork, conduit, equipment locations, etc., to accommodate work with obstacles and interferences encountered.
3. Advise the Owner's Representative in timely manner of questions on equipment locations, heights, etc.
4. Any reasonable location adjustment of equipment and associated services requested by the Architect/Owner's Representative, prior to work being installed, shall be done with no cost added to the Contract.

B. Coordination with Other Divisions:

1. Provide to other Divisions any information related to their appropriate trade concerning the equipment or any work of this Contract in ample time to prevent delay in building progress.
2. Interference:

a. Thoroughly coordinate work with other Divisions and:

1) Determine exact route or location of each piece of equipment, associated services, etc., before fabrication and installation.
2) Maintain maximum headroom. Fire-suppression piping shall be installed tight to all structural members. Piping above ceilings shall not be installed any closer than 12 inches from ceiling support structure.
3) Obtain Engineer's review before installing any work below 7'-0" clear headroom in mechanical areas.
4) Install work of this Division so that all equipment is serviceable and operable.

b. Should Architect's details, field conditions, changes in equipment, or Shop Drawing information necessitate an important rearrangement, advise Architect and act in accordance with his directions.

C. Coordination with Drawings: Review all Drawings and if necessary, request copies of Shop Drawings to coordinate work. If potential conflict occurs between this Division's Drawings and another Drawing, advise Owner's Representative and Architect in writing. Do not proceed with work without written directive from Contract-designated authority.

D. Coordination Drawings:

1. Before construction work commences, subcontractors for all trades shall submit coordination drawings in the form of reproducible transparencies drawn at not less than 1/4 inch = 1 foot in scale, noting Contract work below floor slab and penetrating floor slab]. Such drawings will be required throughout all areas for all trades. These drawings shall show resolutions of trade conflicts in congested areas. All conduit routing for wiring etc., shall be dimensioned from column centerlines.
2. Coordination drawings are intended for the respective Contractor's use during construction and shall not be construed as replacing any Shop Drawings or Record Drawings required elsewhere in these Contract Documents. Generally, drawing details and sections are required only at places of conflict among trades. The drawings may be done on an area basis so as not to delay the overall project.
3. Submit coordinated drawings for review as Shop Drawings. The Owner's Representative's review of coordination drawings shall not relieve this Division from the responsibility for coordinating their work with the work of other trades nor shall it authorize any extra cost, omission, or deviation from the requirements of the Contract Documents. Any costs arising from errors or omissions in the coordination process shall be borne by this Division.

E. Scheduling and Procedure of Work:

1. The work of this Division shall be completed in accordance with Project schedule; otherwise, the Owner's Representative shall have the right to install, at this Division's expense, any temporary work of this Division necessary to meet the scheduled completion date.
2. As work occurs within or attached to existing structures:

   a. Perform all work only on approved schedule.
   b. Do not interfere with normal operation of existing systems.
   c. Do not shut off any services without written authorization of Owner's Representative.
   d. Do as much work as possible prior to the shutdown to minimize the downtime.
   e. Make temporary connections as necessary to maintain schedule agreed upon, with no cost added to the Contract.

3. Proper work attire shall be worn at all times.
4. Refer to Division 01 Specifications for additional requirements, such as parking permits and identification badges.

1.6 SUBMITTALS

A. Supply submittals indicated in each Section of this Division's Specifications and in accordance with requirements of Division 01 Specifications. Supply separate submittals for each Section of Specifications.

B. Wiring Diagrams: Electrically operated equipment shall include factory-approved wiring diagram illustrating proper connections to be made between equipment and power and equipment and auxiliary controls (where applicable).

C. Clearly label each submittal with item name/description; Specifications' section, paragraph and/or subparagraph; and any pertinent Drawing detail reference information.

D. Submit field quality-control reports when indicated in Part 3 of Division's Specifications.

E. Provide Project Engineer, Owner’s Representative, with detailed product data, fire sprinkler construction shop drawings, and hydraulic calculations as required by NFPA 13 before any installation commences. Sprinkler Shop Drawings and hydraulic calculations shall be stamped and sealed by a licensed professional Fire Protection Engineer (FPE).

1.7 QUALITY REQUIREMENTS

A. Contractor shall be licensed in accordance with New York State General Business Law, Article 6-D.

B. System design shall be prepared by a licensed professional Fire Protection Engineer.

C. Observation of the Work:

1. Architect/Engineer may make periodic visits to the job site to observe the general progress and quality of the work. Architect/Engineer will not make continuous or detailed on-site inspections to check the quality and/or quantity of work and will not be responsible for this Division's failure to carry out construction work in accordance with the Contract Documents, Project schedule, or unsound construction procedures or practices.

D. Conflict Requirements:

1. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

E. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not**.**

F. "Testing, adjusting, and balancing (TAB) shall be performed by an independent, certified TAB agency not affiliated with installing contractors."

1.8 DELEGATED DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads and other factors used in performing these services.

1. Delegated design may include, but is not limited to: Fire Protection – hydraulic calculations, , sprinkler system layouts,.

1.9 REFERENCES

A. Industry Standards:

1. The following standards shall govern and shall constitute minimum requirements as approved. If the requirements of this Division's Specifications exceed those of the standards mentioned, this Division's Specifications shall govern.

a. Local and state building codes.
b. Local utility companies.
c. National Electrical Manufacturer's Association ("NEMA").
d. American Institute of Electronic and Electrical Engineers ("IEEE")
e. National Electrical Safety Code ("NESC").
f. National Electric Code ("NEC").
g. Factory Mutual ("FM"), or Underwriters Laboratories, Inc. ("UL"), approved or listed, wherever applicable to materials.
h. American National Standards Institute ("ANSI").
i. National Fire Protection Association ("NFPA") 13, 24, 25, and 291 (latest editions).
j. Official Compilation of Codes, Rules and Regulations of the State of New York ("NYCRR") for education, health, and sanitary rules and regulations, including:

1) Chapter XXXIII – State Fire Prevention and Building Code Council, including:

a) Subchapter A – Uniform Fire Prevention and Building Code (Uniform Code):

(1) Uniform Fire Prevention and Building Code (Part 1219).
(2) Building Construction (Part 1221).
(3) Plumbing Systems (Part 1222).
(4) Mechanical Systems (Part 1223).
(5) Fuel Gas Equipment and Systems (Part 1224).
(6) Fire Prevention (Part 1225).
(7) Property Maintenance (Part 1226).
(8) Existing Buildings (Part 1227).
(9) The following documents by reference: 2025 Residential Code of New York State, 2025 Plumbing Code of New York State, 2025 Mechanical Code of New York State, 2025 Building Code of New York State, 2025 Fire Code of New York State, 2025 Existing Building Code of New York State, 2025 Fuel Gas Code of New York State, and 2025 Property Maintenance Code of New York State.

b) Subchapter B – State Energy Conservation Construction Code (Energy Code):
(1) State Energy Conservation Construction Code (Part 1240).
(2) The amended and updated edition of the Energy Code incorpor
(3) ted, by reference, the following publications:
(1.) 2025 Energy Conservation Construction Code of New York State (publication date: July 2025.
(2.) NYS ASHRAE 90.1-2025 – NYS version of the Energy Standard for Buildings Except Low-Rise Residential Buildings ("NYS ASHRAE 90.1-2025 ")

k. Federal Register Americans Disabilities Act ("ADA"); and ICC/ANSI A117.1, the Handicapped Accessibility Code.

B. Materials and Equipment:

1. Electrical devices, materials, and packaged equipment shall be listed and labeled by UL, FM for the intended use and shall bear their label.
2. Plastic materials or equipment with plastic components cannot be installed or used in or as part of a building unless:

a. Such covered product complies with the requirements of Chapter 26 of the Building Code of New York State.
b. A report of such compliance has been filed with the Department of State in accordance with the Building Code of New York State.

C. Before submitting bid, consult above codes, regulations, and requirements and make all necessary provisions for same in bid.

1.10 TEMPORARY FACILITIES AND CONTROLS

A. Refer to Division 01 Specifications.

1.11 PRODUCT REQUIREMENTS

A. Refer to Division 01 Specifications.

B. The term "product" shall mean items obtained for incorporating into the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes terms "materials," "equipment," "systems," and terms of similar intent.

C. The Contract is based on products specified herein, shown on Drawings, and as authorized by addendum.

D. Ensure all products conform to the Drawings and Specifications with regard to space requirements, performance, capacity, configuration, accessories, and materials of construction.

E. Products furnished shall be new and, where used for similar purposes, of the same manufacturer. To the fullest extent possible, provide like products from a single source. If quantities from a single source cannot be provided, Architect/Engineer will make determination.

F. Where the term "provide" is indicated, it shall have the same meaning as "furnish and install." All products listed shall be furnished and installed unless specifically noted to the contrary.

G. Where the term "basis-of-design product," including manufacturer and model number or other designation, is indicated, intent is to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the Specifications. Bear responsibility and cost for changes made necessary by the use of products other than those of the basis-of-design product.

H. Where "Manufacturer" or "Product" is indicated with only one named manufacturer or one named product, provide the product of the named manufacturer or the listed product. Comparable products or substitutions are not permitted.

I. Justification for acceptance or rejection of unnamed products, unnamed manufacturers, comparable products, or product substitutions will not be demonstrated by the Architect/Engineer.

J. Delivery, Storage, and Handling:

1. Deliver, store, and handle materials as recommended by the manufacturer.
2. Handle and store materials in a manner which will not damage materials.
3. Deliver and store materials throughout floor areas and in locations designated by Owner's Representative. Provide blocking or pallets to prevent materials from becoming soiled.
4. Schedule deliveries with Owner's Representative prior to shipping.
5. Be available at site to receive deliveries as scheduled.
6. Hoist all materials as necessary to complete this Division's scope of work.

K. Warranties:

1. Refer to Sections of this Division's Specifications for specific warranties.
2. Refer to Division 01 Specifications for submittal of warranties.

1.12 EXECUTION

A. Examination of Premises and Existing Conditions:

1. Examine all existing conditions affecting compliance with Drawings and Specifications by visiting site.
2. Ascertain access to site, available storage, and delivery facilities.
3. Verify all governing dimensions at site.
4. Inspect all adjacent work.
5. Verify the location, sizes, and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services; HVAC utility piping and other utilities.
6. No consideration shall be given for alleged misunderstandings. Proceeding with the work indicates acceptance of existing conditions.

B. Roughing:

1. This Division's equipment shall be located generally as shown on Drawings; however, check actual field conditions to determine exact locations and avoid interference with other trades. Deviations from the Drawings proposed by this Division must be reviewed by the Owner's Representative before the changes are made. Work improperly installed due to lack of construction verification shall be corrected at the expense of this Division.
2. Before roughing for equipment furnished by others, obtain approved roughing drawings and exact location for each piece of equipment.
3. Obtain Drawings or proper information giving final locations of all wiring, piping, ductwork, and motor and control connections.
4. Unless otherwise detailed or specified:

    a. All services shall be concealed in wall, above ceilings, etc.
    b. Work shall be exposed only where approved by the Architect.
    c. Notify Owner's Representative and Architect if work cannot be concealed as intended.

C. Cutting and Patching:

1. General Contractor shall provide removals, cutting, patching, and replacement required for installation of the work in this Contract. All penetrations of rated assemblies shall comply with Penetration Firestopping.

    a. General Contractor shall provide patching for all existing openings caused by the removal of existing ducts, fixtures, equipment, piping, supports, etc.

D. Progress Cleaning: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1.13 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

A. Salvage of Existing Materials: Obtain from Owner's Representative a list of existing items being removed, to be delivered to on-site storage as directed. Remove from site and legally dispose of items not specifically noted on said list.

1.14 CLOSEOUT PROCEDURES

A. After all tests are made and installations pronounced satisfactory:

1. Thoroughly clean entire installation (both exposed surfaces and interiors) and leave in clean condition.
2. Remove all debris caused by work.
3. Promptly remove tools, surplus materials, and trailer when work is finally accepted.

B. Lubrication:

1. Prior to final inspection and in the presence of Owner's Representative:

a. Lubricate motors and motor-driven equipment in accordance with manufacturer's recommendations.
b. Check for operation without objectionable noise and for correct rotational direction. If noise or vibration is transmitted to occupied portions of the building by piping, equipment, etc., make changes and additions with no cost added to the Contract.
c. Check motor protective devices for proper size.

2. Provide neat, typewritten list of lubricant for each motor and moving parts.

a. Frame under Plexiglas.
b. Mount as directed by Owner's Representative**.**
c. Include list in operating and maintenance manual.

C. Receipts for Loose Equipment:

1. Prior to request for final payment:

a. Deliver to Owner's Representative the following loose equipment:

1) Tee handles for buried control valves.
2) All other necessary loose equipment for the operation of the fire-suppression systems.

b. Obtain signed receipt for delivered loose equipment.

2. Include receipt in operations and maintenance manual.

D. Refer to Division 01 Specifications for additional information on Project closeout and cleanup.

1.15 OPERATION AND MAINTENANCE DATA

A. Submit 3 complete copies of operating and maintenance manuals for each building to the Owner's Representative 60 days prior to scheduled date of substantial completion. Noncompliance or incomplete submittal will be rejected and returned for resubmittal.

1. Photocopy paragraphs B and C below to be used a checklist for compliance with materials, format, and data.
2. Once items are compiled, place a checkmark in the brackets for items included and strike through the items that do not apply.
3. Submit checklist with operating and maintenance manuals.

B. The operating and maintenance manuals shall consist of and will be reviewed for the following format and contents. Submit O&M manuals in both hard copy and electronic PDF format. If Owner Representative/Construction Manager has an electronic O&M platform, upload to that system."

1. Binder:

a. **[ ]**Three-ring, plain black, vinyl binder free of vendor/contractor logos, etc.
b. **[ ]**Cover and spine (binder) identification including:

1) **[ ]**Manual title: "OPERATION AND MAINTENANCE MANUAL."
2) **[ ]**Owner.
3) **[ ]**Project title.
4) **[ ]**Owner's project number.
5) **[ ]**Year of construction.
6) **[ ]**Trade(s).
7) **[ ]**Volume number and total number of volumes (e.g., Volume 1 of 2).

2. Contents:

a. **[ ]**Project title page (enclosed in clear, transparent plastic sleeve) to match cover identification with at least one-third page blank for review stamp and comments.
b. **[ ]**Project directory page (enclosed in a clear transparent plastic sleeve) including name, address, and telephone number of:

1) **[ ]**Owner.
2) **[ ]**Architect.
3) **[ ]**Engineer.
4) **[ ]**Contractor.
5) **[ ]**Subcontractor.

c. **[ ]**Table of contents (enclosed in a clear, transparent plastic sleeve) arranged to follow Specifications order (with format as list below):

1) **[ ]**Warranty letter.
2) **[ ]**Summary of scheduled maintenance.
3) **[ ]**Lubrication summary.
4) **[ ]**Valve charts.

5) **[ ]**List of maintenance parts, repair/replacement parts, and recommended spare parts, including equipment name, part number, and suppliers (name, address, and phone number). Include a maintenance schedule for the sprinkler system in accordance with the recommendations of NFPA 25.
6) **[ ]**Letters of certification for required system tests.
7) **[ ]**Include on table of contents the following information for each product:

Spec. Section Number	Equipment Description	Supplying Company	Local Representative	Telephone Number
210500	Widgets	Acme Company	John Doe	555-1212

d. **[ ]**Submittals as indicated in "Submittals" Article of this Section, including:

1) **[ ]**Approved copies of all submittals, including parts lists.
2) **[ ]**Material safety data sheets for:

a) **[ ]**Firestopping.
b) **[ ]**Insulations, facings, and adhesives.
c) **[ ]**Anti-freeze loop chemicals.

3) **[ ]**Installation, operating, and maintenance instructions.
4) **[ ]**Wiring diagrams.
5) **[ ]**Warranties.
6) **[ ]**Test reports.

C. **[ ]**Product Identification:

1. **[ ]**Provide indexed cardstock dividers between each submittal group.
2. **[ ]**Arrange in an order corresponding to the original Project's Specifications.
3. **[ ]**Where cataloged data covers more than one item, highlight applicable sections and identify corresponding equipment as marked on Drawings.
4. **[ ]**Instructions shall include:

a. Time schedule for maintenance work (list each item of mechanical equipment requiring inspection, lubrication, or service) and description of the performance of such maintenance.
b. List of types of bearings for each piece of equipment with the type of lubricant required and frequency of lubrication.
c. Sequence of operating and/or flow diagrams for each of the systems, including emergency procedures.
d. Normal starting, operating, and shutdown procedures.

1.16 PROJECT RECORD DOCUMENTS

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Owner's Representative's, Architect's, and/or Engineer's reference during normal working hours.

C. Record Drawings:

1. Submit Contract Drawings and Shop Drawings in both hard copy and electronic PDF format. If Owner Representative/Construction Manager has an electronic platform, upload to that system, incorporating new and revised drawings as modifications are issued.
2. Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

    a. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

        1) Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
        2) Accurately record information in an acceptable drawing technique.
        3) Record data as soon as possible after obtaining it.
        4) Record and check the markup before enclosing concealed installations.
        5) Cross-reference record prints to corresponding archive photographic documentation.

    b. Content: Types of items requiring marking include, but are not limited to, the following:

        1) Dimensional changes to Drawings.
        2) Revisions to details shown on Drawings.
        3) Locations and depths of underground utilities.
        4) Revisions to routing of piping and conduits.
        5) Actual equipment locations.
        6) Locations of concealed internal utilities.
        7) Locations of isolation valves, drain valves, flushing connections, and sprinkler test assemblies.
        8) Changes made by Change Order or Construction Change Directive.
        9) Changes made following Architect's written orders.
        10) Details not on the original Contract Drawings.
        11) Field records for variable and concealed conditions.
        12) Record information on the Work that is shown only schematically.

c. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
d. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
e. Mark important additional information that was either shown schematically or omitted from original Drawings.
f. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

3. Submittals: Comply with Division 01 Specifications and the following:

a. Submit Record Drawings as follows:

1) Initial Submittal:

a) "Submit Record Drawings and Specifications in searchable PDF format.

2) Final Submittal:

a) At the end of Project and after incorporating Engineer's review comments, "Submit Record Drawings and Specifications in searchable PDF format.

b. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1) Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include the following identification on cover sheets.
2) PDFs: Organize into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification (i.e., Drawing Number).
3) Identification: As follows:

a) Project name.
b) Date.
c) Designation "PROJECT RECORD DRAWINGS."
d) Name of Architect.
e) Name of Contractor.

D. Record Specifications: Comply with Division 01 Specifications and the following:

1. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

a. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

b. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
c. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
d. Note related Change Orders, record Product Data, and record Drawings where applicable.

2. Submittal: Submit Record Drawings and Specifications in searchable PDF format. If Owner requires, provide upload to approved electronic project platform. Identification shall be as stated hereinbefore for Record Drawings.

E. Refer to Division 01 Specifications.

1.17 DEMONSTRATION AND TRAINING

A. Owner's designated operating personnel shall be instructed in the care and operation of the systems in accordance with manufacturer's instructions and as indicated in these Specifications.

B. Coordinate instruction schedule with Owner's operations. Notify Owner's personnel in advance of training. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

1.18 WORK RELATED TO ASBESTOS AND WORK IN ASBESTOS-CONTAMINATED AREAS

A. Portions of the existing general construction are believed to be constructed with asbestos-containing materials.

B. Do not disturb such materials.

C. It is understood that a separate contract has been, or will be, issued for the abatement of portions of the asbestos-containing materials.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION 21 00 10

SECTION 21 10 00 - WATER-BASED FIRE-SUPPRESSION SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fire-suppression piping, fittings, and appurtenances.
2. Fire-suppression piping specialties.
3. Sprinklers.

1.2 DEFINITIONS

A. Standard-Pressure Fire-Suppression System Piping: Piping designed to operate at working pressure of 175 psig (1200 kPa) maximum.

1.3 ACTION SUBMITTALS

A. Product Data:

1. For each type of product.

a. Include construction details, material descriptions, dimensions of individual components and profiles.
b. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Fire-suppression system plans and sections, or Building Information Model (BIM), drawn to scale, showing the items described in this Section and coordinated with all building trades.

B. Qualification Data: For qualified Installer and professional engineer.

C. Design Data: Approved fire-suppression piping working plans, prepared in accordance with NFPA 13, including documented approval by AHJs, and including hydraulic calculations if applicable.

D. Welding certificates.

E. Field Test Reports:

1. Indicate and interpret test results for compliance with performance requirements and as described in NFPA 13. Include "Contractor's Material and Test Certificate for Aboveground Piping."

F. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire-suppression systems and specialties to include in emergency, operation, and maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Sprinkler Cabinets: Finished, wall-mounted, steel cabinet with hinged cover, and with space for minimum of six spare sprinklers plus sprinkler wrench. Include number of sprinklers required by NFPA 13 and sprinkler wrench. Include separate cabinet with sprinklers and wrench for each type of sprinkler used on Project.

1.7 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer's responsibilities include designing, fabricating, and installing fire-suppression systems and providing professional engineering services needed to assume engineering responsibility. Base calculations on results of fire-hydrant flow test.

B. Welding Qualifications: Qualify procedures and operators in accordance with ASME Boiler and Pressure Vessel Code.

1.8 FIELD CONDITIONS

A. Interruption of Existing Fire-Suppression Service: Do not interrupt fire-suppression service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary fire-suppression service in accordance with requirements indicated:

1. Notify Owner’s representative no fewer than seven days in advance of proposed interruption of fire-suppression service.
2. Do not proceed with interruption of fire-suppression service without Owner's representatives written permission.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Automatic combination wet-type standpipe sprinkler system.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Suppression System Components, Devices, and Accessories: Listed in ULSE's "Fire Protection Equipment Directory" and FM Approvals' "Approval Guide."

B. Fire-suppression system equipment, specialties, accessories, installation, and testing to comply with NFPA 13.

C. Standard-Pressure Piping System Component: Listed for 175 psig (1200 kPa) minimum working pressure.

2.3 FIRE-SUPPRESSION PIPING, FITTINGS, AND APPURTENANCES

A. Steel Pipe, Fittings, and Appurtenances:

1. Schedule 40 Steel Pipe: black-steel pipe, ASTM A53/A53M, ASTM A135/A135M, or ASTM A795/A795M.

a. Standards:

1) UL 852.
2) FM 1630.

b. Factory-applied exterior coating.
c. Factory-applied bacterial-resistant internal coating to reduce microbiologically influenced corrosion.
d. Pipe ends may be factory or field formed to match joining method.

2. Steel Pipe Nipples: black steel, ASTM A733, made of ASTM A53/A53M, standard-weight, seamless steel pipe with threaded ends.
3. Gray-Iron Threaded Fittings: uncoated gray-iron threaded fittings, ASME B16.4, Class 125, standard pattern.
4. Steel Welding Fittings: ASTM A234/A234M and ASME B16.9.

a. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

5. Plain-End-Pipe Fittings:

a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1) Gruvlok; an ASC Engineered Solution.
2) Shurjoint; a part of Aalberts Integrated Piping Systems.
3) Victaulic Company.

b. Pressure Rating: 175 psig (1200 kPa) minimum.
c. Plain-End Fittings for Steel Piping: Uncoated plain-end fittings, ASTM A53/A53M, carbon steel or ASTM A106/A106M, forged steel with dimensions matching steel pipe.
d. Plain-End-Pipe Couplings for Steel Piping: Rigid pattern for steel-pipe dimensions, ductile-iron or malleable-iron housing. Include EPDM-rubber gasket, and bolts and nuts.

2.4 FIRE-SUPPRESSION PIPING SPECIALTIES

A. Branch Outlet Fittings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Shurjoint; a part of Aalberts Integrated Piping Systems.
b. Tyco Fire Products; brand of Johnson Controls International plc, Building Solutions North America.
c. Victaulic Company.
d. AGF Manufacturing, Inc.

2. Standard: UL 213.
3. Pressure Rating: 175 psig (1200 kPa) minimum.
4. Body Material: Ductile-iron housing with EPDM seals and bolts and nuts.
5. Type: Mechanical-tee and -cross fittings.
6. Configurations: Snap-on and strapless, ductile-iron housing with branch outlets.
7. Size: Of dimension to fit onto sprinkler main and with outlet connections as required to match connected branch piping.
8. Branch Outlets: Grooved, plain-end pipe, or threaded.

2.5 SPRINKLERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Reliable Automatic Sprinkler Co., Inc. (The).
2. Tyco Fire Products; brand of Johnson Controls International plc, Building Solutions North America.
3. Victaulic Company.
4. Viking Group Inc.

B. Standards:

1. UL 199.

2. UL 1626.
3. UL 1767.
4. FM 2000.
5. FM 2008.
6. FM 2030.

C. Listed in ULSE's "Fire Protection Equipment Directory" or FM Approvals' "Approval Guide."

D. Pressure Rating for Sprinklers:

1. Standard Automatic Sprinklers: 175 psig (1200 kPa) minimum.

E. Sprinklers, Automatic Dry with Heat-Responsive Element:

1. Characteristics: Nominal 1/2-inch (13-mm) orifice with Discharge Coefficient K of 5.6, and for "Ordinary" temperature classification rating unless otherwise indicated or required by application.
2. Standard Spray, Quick Response:

a. Upright.
b. Pendent.
c. Recessed pendent.
d. Flat, concealed pendent.
e. Horizontal sidewall.
f. Flat, concealed horizontal sidewall.

F. Sprinkler Finishes: painted.

G. Sprinkler Escutcheons: Materials, types, and finishes for the following sprinkler mounting applications. Escutcheons for concealed, flush, and recessed-type sprinklers are specified with sprinklers.

1. Ceiling Mounting: Plastic, white finish, one piece, flat.

PART 3 - EXECUTION

3.1 INSTALLATION OF FIRE-SUPPRESSION PIPING

A. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated on approved working plans.

1. Deviations from approved working plans for piping require written approval from AHJs. File written approval with Architect before deviating from approved working plans.
2. Coordinate layout and installation of sprinklers with other construction that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.

B. Piping Standard: Comply with NFPA 13 requirements for installation of fire-suppression piping.

C. Install listed fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.

D. Install hangers and supports for fire-suppression piping in accordance with NFPA standards.

E. Fill wet-type fire-suppression system piping with water.

3.2 INSTALLATION OF PIPING JOINTS

A. Install couplings, flanges, flanged fittings, unions, nipples, and transition and special fittings that have finish and pressure ratings same as or higher than system's pressure rating for aboveground applications unless otherwise indicated.

B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

C. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

D. Threaded Joints: Thread pipe with tapered pipe threads in accordance with ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

3.3 INSTALLATION OF SPRINKLERS

A. Install sprinklers into flexible, sprinkler hose fittings, and install hose into bracket on ceiling grid.

3.4 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Perform the following tests and inspections:

1. Leak Test: After installation, charge systems and test for leaks. Repair leaks and retest until no leaks exist.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
3. Flush, test, and inspect fire-suppression systems in accordance with NFPA standards.
4. Energize circuits to electrical equipment and devices.
5. Start and run air compressors.
6. Coordinate with fire-alarm tests. Operate as required.
7. Coordinate with fire-pump tests. Operate as required.
8. Verify that equipment hose threads are same as local fire department equipment.

9. Verify that sprinklers' original factory finish has not been contaminated with dirt, debris, or paint. Sprinklers containing other-than-original factory finish are to be considered defective and replaced with new products. Repair and/or cleaning is not acceptable.

C. Fire-suppression piping system will be considered defective if it does not pass tests and inspections.

D. Fire-suppression piping system components considered defective during testing will be replaced with new components. Repair of defective components is not acceptable.

E. Prepare test and inspection reports.

3.5 CLEANING

A. Clean dirt and debris from fire-suppression system piping, system control valves, sprinklers, and associated components.

B. Only sprinklers with their original factory finish are acceptable. Remove and replace any sprinklers that are painted or have any other finish than their original factory finish.

3.6 PIPING SCHEDULE

A. Standard-Pressure, Wet-Pipe Sprinkler System, NPS 2 (DN 50) and Smaller, to Be One of the Following:

1. Schedule 40, black-steel pipe with threaded ends; uncoated, gray-iron threaded fittings; and threaded joints.

3.7 SPRINKLER SCHEDULE

A. Use sprinkler types in subparagraphs below for the following applications:

1. Rooms with Hard Ceilings: Flat concealed sprinklers.

B. Provide sprinkler types in subparagraphs below with finishes indicated.

1. Flat Concealed Sprinklers: Rough brass, with factory-painted white cover plate.

END OF SECTION 21 10 00

SECTION 22 00 10 - GENERAL REQUIREMENTS FOR PLUMBING

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 the Work of this Division.

1. The intent of this Section is to complement Division 01 Specifications and to provide supplementary, trade-specific information.
2. Refer conflicting requirements to Architect for a decision before proceeding. If a resolution is not obtained, assume the costliest to apply.

B. Thoroughly study all Architectural, HVAC, Plumbing, Electrical, Fire Suppression, Structural, and Site Drawings and Specifications before submitting bids.

C. Drawings and Specifications are to be considered as supplementing each other. Work specified but not shown or shown but not specified shall be performed or furnished as though mentioned in both Specifications and Drawings.

D. Details on Drawings are to be considered typical for similar applications unless specifically noted otherwise.

1.2 SUMMARY

A. Bid shall include the cost of all labor, materials, tools, transportation, equipment, insurance, temporary protection, rentals, permits, taxes, and all necessary and miscellaneous items required to provide various systems shown and described complete and in good operating condition whether or not these miscellaneous items are specifically described in the Specifications or shown on the Drawings.

B. Install all work in accordance with all applicable codes and prepare supplemental detail drawings and Shop Drawings reflecting purchased equipment requirements as necessary to obtain approval of authorities having jurisdiction over this Project.

C. Guarantee workmanship, materials, and performance of this Division's systems [in accordance with the requirements of the Contract Documents**.**

D. The following are specifically included without limiting the generality implied by the Drawings or Specifications:

1. Plumbing systems including:

a. Domestic-water piping.
b. Sanitary waste and vent piping,

c. Commercial plumbing fixtures.
d. Selective demolition for plumbing.

2. Apply firestopping to penetrations of fire-rated construction, to restore original fire-resistance rating of assembly, and as indicated in this Division's Specifications. Comply with requirements in Division 07 Section "Penetration Firestopping."
3. Submittal of forms and Drawings to review and permit agencies.
4. Submittals.
5. Record Documents.
6. Permits and Inspections: Apply for and obtain all required permits and inspections in accordance with Division 01; pay all related fees and charges.

1.3 ALLOWANCES

A. Refer to Division 01 Specifications.

1.4 UNIT PRICES

A. Refer to Division 01 Specifications.

1.5 PROJECT MANAGEMENT AND COORDINATION

A. General Requirements:

1. Drawings show general design arrangement; install work substantially as indicated. Verify exact location and elevations on job. DO NOT SCALE DRAWINGS.
2. Due to small scale of Drawings, it is not possible to indicate all offsets, fittings, changes in elevation, interferences, etc. Adjust installation of piping, ductwork, conduit, equipment locations, etc., to accommodate work with obstacles and interferences encountered.
3. Advise the Owner's Representative in timely manner of questions on equipment locations, heights, etc.
4. Any reasonable location adjustment of equipment and associated services requested by the Architect/Owner's Representative, prior to work being installed, shall be done with no cost added to the Contract.

B. Coordination with Other Divisions:

1. Provide to other Divisions any information related to their appropriate trade concerning the equipment or any work of this Contract in ample time to prevent delay in building progress.
2. Interference:

a. Thoroughly coordinate work with other Divisions and:

1) Determine exact route or location of each piece of equipment, associated services, etc., before fabrication and installation.

2) Install work of this Division so that all equipment is serviceable and operable.

b. Should Architect's details, field conditions, changes in equipment, or Shop Drawing information necessitate an important rearrangement, advise Architect and act in accordance with his directions.

C. Coordination with Drawings: Review all Drawings and if necessary, request copies of Shop Drawings to coordinate work. If potential conflict occurs between this Division's Drawings and another Drawing, advise Owner's Representative and Architect in writing. Do not proceed with work without written directive from Contract-designated authority.

D. Scheduling and Procedure of Work:

1. The work of this Division shall be completed in accordance with Project schedule; otherwise, the Owner's Representative shall have the right to install, at this Division's expense, any temporary work of this Division necessary to meet the scheduled completion date.
2. As work occurs within or attached to existing structures:

a. Perform all work only on approved schedule.
b. Do not interfere with normal operation of existing systems.
c. Do not shut off any services without written authorization of Owner's Representative.
d. Do as much work as possible prior to the shutdown to minimize the downtime.
e. Make temporary connections as necessary to maintain schedule agreed upon, with no cost added to the Contract.

3. Proper work attire shall be worn at all times.
4. Refer to Division 01 Specifications for additional requirements, such as parking permits and identification badges.

1.6 SUBMITTALS

A. Supply submittals indicated in each Section of this Division's Specifications and in accordance with requirements of Division 01 Specifications. Supply separate submittals for each Section of Specifications.

B. Clearly label each submittal with item name/description; Specifications' section, paragraph and/or subparagraph; and any pertinent Drawing detail reference information.

C. Submit field quality-control reports when indicated in Part 3 of Division's Specifications.

1.7 QUALITY REQUIREMENTS

A. Observation of the Work:

1. Architect/Engineer may make periodic visits to the job site to observe the general progress and quality of the work. Architect/Engineer will not make continuous or detailed on-site inspections to check the quality and/or quantity of work and will not be responsible for this Division's failure to carry out construction work in accordance with the Contract Documents, Project schedule, or unsound construction procedures or practices.

B. Conflict Requirements:

1. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

C. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not**.**

D. "Testing, adjusting, and balancing (TAB) shall be performed by an independent, certified TAB agency not affiliated with installing contractors."

1.8 REFERENCES

A. Industry Standards:

1. The following standards shall govern and shall constitute minimum requirements as approved. If the requirements of this Division's Specifications exceed those of the standards mentioned, this Division's Specifications shall govern.

a. Local and state building codes.
b. American National Standards Institute ("ANSI").
c. National Plumbing Code ASA A40.8.
d. Official Compilation of Codes, Rules and Regulations of the State of New York ("NYCRR") for education, health, and sanitary rules and regulations, including:

1) Chapter XXXIII – State Fire Prevention and Building Code Council, including:

a) Subchapter A – Uniform Fire Prevention and Building Code (Uniform Code):
(1) Building Construction (Part 1221).
(2) Plumbing Systems (Part 1222).
(3) Existing Buildings (Part 1227).
(4) The following documents by reference: 2025 Plumbing Code of New York State, 2025 Building Code of New York State2025 Existing Building Code of New York State,.

b) Subchapter B – State Energy Conservation Construction Code (Energy Code):
(1) State Energy Conservation Construction Code (Part 1240).

e. Federal Register Americans Disabilities Act ("ADA"); and ICC/ANSI A117.1, the Handicapped Accessibility Code.

B. Materials and Equipment:

1. Plastic materials or equipment with plastic components cannot be installed or used in or as part of a building unless:

C. Before submitting bid, consult above codes, regulations, and requirements and make all necessary provisions for same in bid.

1.9 TEMPORARY FACILITIES AND CONTROLS

A. Refer to Division 01 Specifications.

1.10 PRODUCT REQUIREMENTS

A. Refer to Division 01 Specifications.

B. The term "product" shall mean items obtained for incorporating into the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes terms "materials," "equipment," "systems," and terms of similar intent.

C. The Contract is based on products specified herein, shown on Drawings, and as authorized by addendum.

D. Ensure all products conform to the Drawings and Specifications with regard to space requirements, performance, capacity, configuration, accessories, and materials of construction.

E. Products furnished shall be new and, where used for similar purposes, of the same manufacturer. To the fullest extent possible, provide like products from a single source. If quantities from a single source cannot be provided, Architect/Engineer will make determination.

F. Where the term "provide" is indicated, it shall have the same meaning as "furnish and install." All products listed shall be furnished and installed unless specifically noted to the contrary.

G. Where the term "basis-of-design product," including manufacturer and model number or other designation, is indicated, intent is to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the Specifications. Bear responsibility and cost for changes made necessary by the use of products other than those of the basis-of-design product.

H. Justification for acceptance or rejection of unnamed products, unnamed manufacturers, comparable products, or product substitutions will not be demonstrated by the Architect/Engineer.

I. Delivery, Storage, and Handling:

1. Deliver, store, and handle materials as recommended by the manufacturer.
2. Handle and store materials in a manner which will not damage materials.
3. Deliver and store materials throughout floor areas and in locations designated by Owner's Representative. Provide blocking or pallets to prevent materials from becoming soiled.
4. Schedule deliveries with Owner's Representative prior to shipping.
5. Be available at site to receive deliveries as scheduled.
6. Hoist all materials as necessary to complete this Division's scope of work.

J. Warranties:

1. Refer to Sections of this Division's Specifications for specific warranties.
2. Refer to Division 01 Specifications for submittal of warranties.

1.11 EXECUTION

A. Examination of Premises and Existing Conditions:

1. Examine all existing conditions affecting compliance with Drawings and Specifications by visiting site.
2. Ascertain access to site, available storage, and delivery facilities.
3. Verify all governing dimensions at site.
4. Inspect all adjacent work.
5. No consideration shall be given for alleged misunderstandings. Proceeding with the work indicates acceptance of existing conditions.

B. Roughing:

1. This Division's equipment shall be located generally as shown on Drawings; however, check actual field conditions to determine exact locations and avoid interference with other trades. Deviations from the Drawings proposed by this Division must be reviewed by the Owner's Representative before the changes are made. Work improperly installed due to lack of construction verification shall be corrected at the expense of this Division.
2. Before roughing for equipment furnished by others, obtain approved roughing drawings and exact location for each piece of equipment.
3. Obtain Drawings or proper information giving final locations of all wiring, piping, ductwork, and motor and control connections.
4. Unless otherwise detailed or specified:

    a. All services shall be concealed in wall, above ceilings, etc.
    b. Work shall be exposed only where approved by the Architect.
    c. Notify Owner's Representative and Architect if work cannot be concealed as intended.

C. Cutting and Patching:

1. General Contractor shall provide removals, cutting, patching, and replacement required for installation of the work in this Contract. All penetrations of rated assemblies shall comply with Penetration Firestopping.

a. General Contractor shall provide patching for all existing openings caused by the removal of existing ducts, fixtures, equipment, piping, supports, etc.

D. Progress Cleaning: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1.12 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

A. Salvage of Existing Materials: Obtain from Owner's Representative a list of existing items being removed, to be delivered to on-site storage as directed. Remove from site and legally dispose of items not specifically noted on said list.

1.13 CLOSEOUT PROCEDURES

A. After all tests are made and installations pronounced satisfactory:

1. Thoroughly clean entire installation (both exposed surfaces and interiors) and leave in clean condition.
2. Remove all debris caused by work.
3. Promptly remove tools, surplus materials, and trailer when work is finally accepted.

B. Receipts for Loose Equipment:

1. Prior to request for final payment:

a. Deliver to Owner's Representative the following loose equipment:

1) Loose keys on water supply stops.
2) All other necessary loose equipment for the operation of the plumbing systems.

b. Obtain signed receipt for delivered loose equipment.

2. Include receipt in operations and maintenance manual.

C. Refer to Division 01 Specifications for additional information on Project closeout and cleanup.

1.14 OPERATION AND MAINTENANCE DATA

A. Submit 3 complete copies of operating and maintenance manuals for each building to the Owner's Representative 60 days prior to scheduled date of substantial completion. Noncompliance or incomplete submittal will be rejected and returned for resubmittal.

1. Photocopy paragraphs B and C below to be used a checklist for compliance with materials, format, and data.
2. Once items are compiled, place a checkmark in the brackets for items included and strike through the items that do not apply.
3. Submit checklist with operating and maintenance manuals.

B. The operating and maintenance manuals shall consist of and will be reviewed for the following format and contents. Submit O&M manuals in both hard copy and electronic PDF format. If Owner Representative/Construction Manager has an electronic O&M platform, upload to that system."

1. Binder:

a. **[ ]**Three-ring, plain black, vinyl binder free of vendor/contractor logos, etc.
b. **[ ]**Cover and spine (binder) identification including:

1) **[ ]**Manual title: "OPERATION AND MAINTENANCE MANUAL."
2) **[ ]**Owner.
3) **[ ]**Project title.
4) **[ ]**Owner's project number.
5) **[ ]**Year of construction.
6) **[ ]**Trade(s).
7) **[ ]**Volume number and total number of volumes (e.g., Volume 1 of 2).

2. Contents:

a. **[ ]**Project title page (enclosed in clear, transparent plastic sleeve) to match cover identification with at least one-third page blank for review stamp and comments.
b. **[ ]**Project directory page (enclosed in a clear transparent plastic sleeve) including name, address, and telephone number of:

1) **[ ]**Owner.
2) **[ ]**Architect.
3) **[ ]**Engineer.
4) **[ ]**Contractor.
5) **[ ]**Subcontractor.

c. **[ ]**Table of contents (enclosed in a clear, transparent plastic sleeve) arranged to follow Specifications order (with format as list below):

1) **[ ]**Warranty letter.
2) **[ ]**Summary of scheduled maintenance.
3) **[ ]**Lubrication summary.
4) **[ ]**Valve charts.

5) **[ ]**List of maintenance parts, repair/replacement parts, and recommended spare parts, including equipment name, part number, and suppliers (name, address, and phone number).
6) **[ ]**Letters of certification for required system tests.
7) **[ ]**Include on table of contents the following information for each product:

Spec. Section Number	Equipment Description	Supplying Company	Local Representative	Telephone Number
220500	Widgets	Acme Company	John Doe	555-1212

d. **[ ]**Submittals as indicated in "Submittals" Article of this Section, including:

1) **[ ]**Approved copies of all submittals, including parts lists.
2) **[ ]**Material safety data sheets for:

a) **[ ]**Firestopping.
b) **[ ]**Insulations, facings, and adhesives.

3) **[ ]**Installation, operating, and maintenance instructions.
4) **[ ]**Wiring diagrams.
5) **[ ]**Warranties.
6) **[ ]**Test reports.

C. **[ ]**Product Identification:

1. **[ ]**Provide indexed cardstock dividers between each submittal group.
2. **[ ]**Arrange in an order corresponding to the original Project's Specifications.
3. **[ ]**Where cataloged data covers more than one item, highlight applicable sections and identify corresponding equipment as marked on Drawings.
4. **[ ]**Instructions shall include:

a. Time schedule for maintenance work (list each item of mechanical equipment requiring inspection, lubrication, or service) and description of the performance of such maintenance.
b. List of types of bearings for each piece of equipment with the type of lubricant required and frequency of lubrication.
c. Sequence of operating and/or flow diagrams for each of the systems, including emergency procedures.
d. Normal starting, operating, and shutdown procedures.

1.15 PROJECT RECORD DOCUMENTS

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean,

dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Owner's Representative's, Architect's, and/or Engineer's reference during normal working hours.

C. Record Drawings:

1. Submit Contract Drawings and Shop Drawings in both hard copy and electronic PDF format. If Owner Representative/Construction Manager has an electronic platform, upload to that system, incorporating new and revised drawings as modifications are issued.
2. Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

    a. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

        1) Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
        2) Accurately record information in an acceptable drawing technique.
        3) Record data as soon as possible after obtaining it.
        4) Record and check the markup before enclosing concealed installations.
        5) Cross-reference record prints to corresponding archive photographic documentation.

    b. Content: Types of items requiring marking include, but are not limited to, the following:

        1) Dimensional changes to Drawings.
        2) Revisions to details shown on Drawings.
        3) Locations and depths of underground utilities.
        4) Revisions to routing of piping and conduits.
        5) Actual equipment locations.
        6) Locations of concealed internal utilities.
        7) Changes made by Change Order or Construction Change Directive.
        8) Changes made following Architect's written orders.
        9) Details not on the original Contract Drawings.
        10) Field records for variable and concealed conditions.
        11) Record information on the Work that is shown only schematically.

    c. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
    d. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
    e. Mark important additional information that was either shown schematically or omitted from original Drawings.

f. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

3. Submittals: Comply with Division 01 Specifications and the following:

a. Submit Record Drawings as follows:

1) Initial Submittal:

a) "Submit Record Drawings and Specifications in searchable PDF format. If Owner requires, provide upload to approved electronic project platform (e.g., Procor)."Engineer will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

2) Final Submittal:

a) At the end of Project and after incorporating Engineer's review comments, "Submit Record Drawings and Specifications in searchable PDF format. If Owner requires, provide upload to approved electronic project platform."

b. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1) Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include the following identification on cover sheets.
2) PDFs: Organize into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification (i.e., Drawing Number).
3) Identification: As follows:

a) Project name.
b) Date.
c) Designation "PROJECT RECORD DRAWINGS."
d) Name of Architect.
e) Name of Contractor.

D. Record Specifications: Comply with Division 01 Specifications and the following:

1. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

a. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
b. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.

c. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
d. Note related Change Orders, record Product Data, and record Drawings where applicable.

2. Submittal: Submit Record Drawings and Specifications in searchable PDF format. If Owner requires, provide upload to approved electronic project platform. Identification shall be as stated hereinbefore for Record Drawings.

E. Refer to Division 01 Specifications.

1.16 DEMONSTRATION AND TRAINING

A. Owner's designated operating personnel shall be instructed in the care and operation of the systems in accordance with manufacturer's instructions and as indicated in these Specifications.

B. Coordinate instruction schedule with Owner's operations. Notify Owner's personnel in advance of training. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION 22 00 10

SECTION 22 11 16 - DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Copper tube and fittings.
2. Piping joining materials.
3. Dielectric fittings.

1.2 ACTION SUBMITTALS

A. Product Data: For transition fittings and dielectric fittings.

1.3 INFORMATIONAL SUBMITTALS

A. System purging and disinfecting activities report.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

B. Potable-water piping and components shall comply with NSF 14 and NSF 61 Annex G. Plastic piping components shall be marked with "NSF-pw."

C. Comply with NSF Standard 372 for low lead.

2.2 COPPER TUBE AND FITTINGS

A. Hard Copper Tube: ASTM B 88, Type L water tube, drawn temper.

B. Wrought-Copper, Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.

2.3 PIPING JOINING MATERIALS

A. Solder Filler Metals: ASTM B 32, lead-free alloys.

B. Flux: ASTM B 813, water flushable.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install copper tubing under building slab according to CDA's "Copper Tube Handbook."

C. Install domestic water piping level without pitch and plumb.

D. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.

E. Install piping to permit valve servicing.

F. Install piping free of sags and bends.

G. Install fittings for changes in direction and branch connections.

H. Prohibited Fittings: Screw or sand bushings; 90-degree or 45-degree street elbows, close nipples, long screws, bullhead tees, and special fittings, unless approved by the local inspecting agency.

3.2 JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

C. Soldered Joints for Copper Tubing: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."

3.3 TRANSITION FITTING INSTALLATION

A. Install transition couplings at joints of dissimilar piping.

B. Transition Fittings in Underground Domestic Water Piping:

1. Fittings for NPS 1-1/2 and Smaller: Fitting-type coupling.
2. Fittings for NPS 2 and Larger: Sleeve-type coupling.

C. Transition Fittings in Aboveground Domestic Water Piping NPS 2 and Smaller: Plastic-to-metal transition fittings.

3.4 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to the following:

1. Plumbing Fixtures: Cold- and hot-water-supply piping in sizes indicated, but not smaller than that required by plumbing code.

3.5 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Piping Inspections:

a. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
b. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:

1) Roughing-in Inspection: Arrange for inspection of piping before concealing or closing in after roughing in and before setting fixtures.
2) Final Inspection: Arrange for authorities having jurisdiction to observe tests specified in "Piping Tests" Subparagraph below and to ensure compliance with requirements.

c. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
d. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

2. Piping Tests:

a. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
b. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
c. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
d. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source

and allow it to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.

e. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained.
f. Prepare reports for tests and for corrective action required.

B. Domestic water piping will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.6 ADJUSTING

A. Perform the following adjustments before operation:

1. Open shutoff valves to fully open position.
2. Remove plugs used during testing of piping and for temporary sealing of piping during installation.
3. Remove and clean strainer screens. Close drain valves and replace drain plugs.

3.7 CLEANING

A. Clean and disinfect potable domestic water piping as follows:

1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:

a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
b. Fill and isolate system according to either of the following:

1) Fill system or part thereof with water/chlorine solution with at least 50 ppm of chlorine. Isolate with valves and allow to stand for 24 hours.
2) Fill system or part thereof with water/chlorine solution with at least 200 ppm of chlorine. Isolate and allow to stand for three hours.

c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
d. Repeat procedures if biological examination shows contamination.
e. Submit water samples in sterile bottles to authorities having jurisdiction.

B. Prepare and submit reports of purging and disinfecting activities. Include copies of water-sample approvals from authorities having jurisdiction.

C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

D. Purging and disinfecting of both hot-and cold-water systems shall occur two weeks prior to occupancy or use of system affected. One week after disinfecting, hot-water system shall be tested for Legionella prior to occupancy or use.

3.8 PIPING SCHEDULE

A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

B. Aboveground domestic water piping, NPS 2 and smaller, shall be the following:

1. Hard copper tube, ASTM B 88, Type L; wrought-copper, solder-joint fittings; and soldered joints.

END OF SECTION 22 11 16

SECTION 22 13 16 - SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. PVC pipe and fittings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.4 FIELD CONDITIONS

A. Interruption of Existing Sanitary Waste Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service in accordance with requirements indicated:

1. Notify Construction Manager no fewer than two days in advance of proposed interruption of sanitary waste service.
2. Do not proceed with interruption of sanitary waste service without Construction Manager's written permission.

1.5 WARRANTY

A. Listed manufacturers to provide labeling and warranty of their respective products.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Components and installation are capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10 ft. head of water.

2.2 PIPING MATERIALS

A. Piping materials to bear label, stamp, or other markings of specified testing agency.

B. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.3 PVC PIPE AND FITTINGS

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. Charlotte Pipe and Foundry Company.
2. GF Piping Systems.
3. JM Eagle; J-M Manufacturing Co., Inc.
4. Mueller Industries, Inc.
5. National Pipe and Plastic, Inc.
6. North America Pipe Corporation.
7. Rocky Mountain Colby Pipe Company.
8. Silver-line Plastics.

B. Comply with NSF 14 for plastic piping components. Include "NSF-dwv" marking for plastic drain, waste, and vent piping and "NSF-sewer" marking for plastic sewer piping.

C. Solid-Wall PVC Pipe: ASTM D2665 drain, waste, and vent.

D. PVC Socket Fittings: ASTM D2665, made in accordance with ASTM D3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.

E. Adhesive Primer: ASTM F656.

1. Adhesive primer shall have a VOC content of 550 g/L or less.
2. Adhesive primer shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

F. Solvent Cement: ASTM D2564.

1. Solvent cement shall have a VOC content of 510 g/L or less.

2.4 SPECIALTY PIPE FITTINGS

A. Transition Couplings:

1. General Requirements: Fitting or device for joining piping with small differences in ODs or of different materials. Include end connections of same size as and compatible with pipes to be joined.

2. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.
3. Unshielded, Non-Pressure Transition Couplings:

    a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

        1) Dallas Specialty & Mfg. Co.
        2) Fernco Inc.
        3) Mission Rubber Company, LLC; a division of MCP Industries.
        4) Plastic Oddities.

    b. Standard: ASTM C1173.
    c. Description: Elastomeric, sleeve-type, reducing or transition pattern. Include shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
    d. End Connections: Same size as and compatible with pipes to be joined.
    e. Sleeve Materials:

        1) For Cast-Iron Soil Pipes: ASTM C564, rubber.
        2) For Plastic Pipes: ASTM F477, elastomeric seal or ASTM D5926 PVC.
        3) For Dissimilar Pipes: ASTM D5926 PVC or other material compatible with pipe materials being joined.

4. Shielded, Non-Pressure Transition Couplings:

    a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

        1) Cascade Waterworks Mfg. Co.
        2) Mission Rubber Company, LLC; a division of MCP Industries.

    b. Standard: ASTM C1460.
    c. Description: Elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.
    d. End Connections: Same size as and compatible with pipes to be joined.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems.

1. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations.

2. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

C. Install fittings for changes in direction and branch connections.

D. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends.

1. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical.
2. Use long-turn, double Y-branch, and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe.

a. Straight tees, elbows, and crosses may be used on vent lines.

3. Do not change direction of flow more than 90 degrees.
4. Use proper size of standard increasers and reducers if pipes of different sizes are connected.

a. Reducing size of waste piping in direction of flow is prohibited.

E. Install cast-iron soil piping in accordance with CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."

F. Install steel piping in accordance with applicable plumbing code.

G. Install aboveground PVC piping in accordance with ASTM D2665.

3.2 JOINT CONSTRUCTION

A. Hubless, Cast-Iron Soil Piping Coupled Joints:

1. Join hubless, cast-iron soil piping in accordance with CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-piping coupling joints.

B. Plastic, Non-Pressure-Piping, Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings in accordance with the following:

1. Comply with ASTM F402 for safe-handling practice of cleaners, primers, and solvent cements.
2. PVC Piping: Join in accordance with ASTM D2855 and ASTM D2665 appendixes.

3.3 SPECIALTY PIPE FITTING INSTALLATION

A. Transition Couplings:

1. Install transition couplings at joints of piping with small differences in ODs.
2. In Waste Drainage Piping: Unshielded, non-pressure transition couplings.

3.4 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.

C. Connect waste and vent piping to the following:

1. Plumbing Fixtures: Connect waste piping in sizes indicated, but not smaller than required by plumbing code.

3.5 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.

1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.

C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

D. Test sanitary waste and vent piping in accordance with procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired.

a. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.

2. Leave uncovered and unconcealed new, altered, extended, or replaced waste and vent piping until it has been tested and approved.

a. Expose work that was covered or concealed before it was tested.

3. Roughing-in Plumbing Test Procedure: Test waste and vent piping except outside leaders on completion of roughing-in.

a. Close openings in piping system and fill with water to point of overflow, but not less than 10 ft. head of water.
b. From 15 minutes before inspection starts to completion of inspection, water level must not drop.
c. Inspect joints for leaks.

4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight.

a. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1 inch wg.
b. Use U-tube or manometer inserted in trap of water closet to measure this pressure.
c. Air pressure must remain constant without introducing additional air throughout period of inspection.
d. Inspect plumbing fixture connections for gas and water leaks.

5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
6. Prepare reports for tests and required corrective action.

3.6 CLEANING AND PROTECTION

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect sanitary waste and vent piping during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

D. Repair damage to adjacent materials caused by waste and vent piping installation.

3.7 PIPING SCHEDULE

A. Aboveground, soil and waste piping NPS 4 and smaller are to be any of the following:

1. Hubless, cast-iron soil pipe and fittings; CISPI hubless-piping couplings; and coupled joints.
2. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints.
3. Dissimilar Pipe-Material Couplings: Unshielded, non-pressure transition couplings.

END OF SECTION 22 13 16

SECTION 22 42 00 - COMMERCIAL PLUMBING FIXTURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Commercial sinks.
   2. Temperature-actuated, water mixing valves.

1.2 ACTION SUBMITTALS

A. Product Data:

   1. Include construction details, material descriptions and thicknesses, dimensions of individual components and profiles, and finishes for plumbing fixtures.
   2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Counter cutout templates for mounting of counter-mounted lavatories and/or counter-mounted sinks.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data:
   1. For sinks and faucets to include in operation and maintenance manuals.

      a. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

PART 2 - PRODUCTS

2.1 COMMERCIAL SINKS

A. Kitchen/Utility Sinks:

   1. Kitchen/Utility Sinks, Counter Mounted - Stainless Steel SK-A:

      a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1) Acorn Engineering Company; a Division of Morris Group International.
2) Advance Tabco.
3) Elkay.
4) Just Manufacturing.

b. Source Limitations: Obtain sinks from single source from single manufacturer.
c. Fixture:

1) Standard: ASME A112.19.3/CSA B45.4.
2) Type: Stainless steel, self-rimming, sound-deadened unit with ledge back.
3) Number of Compartments: One.
4) Overall Dimensions: 19 ½ in. x 19 in..
5) Material: 18 gauge, Type 304 stainless steel.
6) Compartment:

a) Dimensions: 16 in. X 13 in..
b) Drain: Grid with NPS 1-1/2 (DN 40) tailpiece and twist drain.
c) Drain Location: Centered in compartment.
d) Depth: Standard.

d. Faucet(s): Type 1.

1) Number Required: One.
2) Mounting: On ledge.

e. Supply Fittings:

1) Standard: ASME A112.18.1/CSA B125.1.
2) Supplies: Chrome-plated brass one quarter turn ball type stop with inlet connection matching water-supply piping type and size.

a) Operation: Loose key.
b) Risers: NPS 1/2 (DN 15), ASME A112.18.6/CSA B125.6, braided or corrugated stainless steel flexible hose.

f. Waste Fittings:

1) Standard: ASME A112.18.2/CSA B125.2.
2) Trap(s) Size: NPS 1-1/2 (DN 40).
3) Trap(s) Material:

a) Chrome-plated, two-piece, cast-brass trap and ground-joint swivel elbow with 17-gauge brass tube to wall; and chrome-plated brass or steel wall flange.

g. Mounting: On counter with sealant.

B. Sink Faucets, Manually Operated:

1. Sink Faucets, Manually Operated Type 1: Single control, mixing.

a. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1) American Standard.
2) Central Brass Company; a Pioneer Industries, Inc. brand.
3) Chicago Faucets; Geberit Group.
4) Elkay.
5) Just Manufacturing.
6) Kohler Co.
7) Speakman Company.
8) T&S Brass and Bronze Works, Inc.
9) Zurn Industries, LLC.

b. Source Limitations: Obtain sink faucets from single source from single manufacturer.
c. Standards:

1) ASME A112.18.1/CSA B125.1.
2) NSF 61.
3) NSF 372.

d. Description: Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture hole punchings; coordinate outlet with spout and sink receptor.
e. Body Type: Centerset.
f. Body Material: Commercial, solid-brass, or die-cast housing with brazed copper and brass waterway.
g. Finish: Polished chrome plate.
h. Maximum Flow Rate: 1.5 gpm (5.7 L/min).
i. Mounting Type: Deck, concealed.
j. Valve Handle(s): Lever.
k. Spout Type: Swing.
l. Spout Outlet: Aerator.

C. Water-Temperature Limiting Devices TMV-1:

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. Acorn Engineering Company; a Division of Morris Group International.
b. Apollo Flow Controls; Conbraco Industries, Inc.
c. Cash Acme, A Division of Reliance Worldwide Corporation.
d. Leonard Valve Company.
e. POWERS; A WATTS Brand.
f. Symmons Industries, Inc.
g. TACO Comfort Solutions, Inc.
h. WATTS.
i. Zurn Industries, LLC.

2. Standard: ASSE 1070.
3. Pressure Rating: 125 psig.
4. Type: Thermostatically controlled, water mixing valve.
5. Material: Bronze body with corrosion-resistant interior components.
6. Connections: Threaded union inlets and outlet.
7. Accessories: Check stops on hot- and cold-water supplies, and adjustable, temperature-control handle.
8. Tempered-Water Setting: 110 deg F.
9. Tempered-Water Design Flow Rate: 1.5 gpm.
10. Valve Finish: Rough bronze.

D. Grout:

1. Standard: ASTM C1107/C1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
2. Characteristics: Nonshrink; recommended for interior and exterior applications.
3. Design Mix: 5000 psi (34.5 MPa), 28-day compressive strength.
4. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in of water-supply piping and sanitary drainage and vent piping systems to verify actual locations of piping connections before plumbing fixture installation.

B. Examine walls and floors for suitable conditions where plumbing fixtures will be installed.

C. Examine counters for suitable conditions where lavatories and sinks will be installed.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF COMMERCIAL PLUMBING FIXTURES

A. Sink Installation:

1. Install sinks level and plumb in accordance with roughing-in drawings.
2. Install water-supply piping with stop on each supply to each sink faucet.
3. Install trap and waste piping on each drain outlet of each sink to be connected to sanitary drainage system.
4. Seal joints between sinks, counters, floors, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

3.3 INSTALLATION OF PIPING CONNECTIONS

A. Connect plumbing fixtures with water supplies and soil, waste, and vent piping. Use size fittings required to match plumbing fixtures.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Comply with soil, waste, and vent piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

3.4 ADJUSTING

A. Operate and adjust plumbing fixtures and controls. Replace damaged and malfunctioning plumbing fixtures, fittings, and controls.

B. Adjust water pressure at faucets to produce proper flow.

C. Adjust water pressure at shower valves to produce proper flow.

3.5 CLEANING AND PROTECTION

A. After completing installation of plumbing fixtures, inspect and repair damage to finishes. Replace any fixtures unable to be repaired to the satisfaction of the Architect.

B. Clean plumbing fixtures and associated faucets, valves, flushometer valves, and fittings with manufacturers' recommended cleaning methods and materials.

C. Provide protective covering for installed plumbing fixtures and associated faucets, valves, flushometer valves, and fittings.

D. Do not allow use of plumbing fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION 22 42 00

SECTION 23 00 10 - GENERAL REQUIREMENTS FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1. The intent of this Section is to complement Division 01 Specifications and to provide supplementary, trade-specific information.
2. Refer conflicting requirements to Architect for a decision before proceeding. If a resolution is not obtained, assume the costliest to apply.

B. Thoroughly study all Architectural, HVAC, Plumbing, Electrical, Fire Suppression, Structural, and Site Drawings and Specifications before submitting bids.

C. Drawings and Specifications are to be considered as supplementing each other. Work specified but not shown or shown but not specified shall be performed or furnished as though mentioned in both Specifications and Drawings.

D. Details on Drawings are to be considered typical for similar applications unless specifically noted otherwise.

1.2 SUMMARY

A. Bid shall include the cost of all labor, materials, tools, transportation, equipment, insurance, temporary protection, rentals, permits, taxes, and all necessary and miscellaneous items required to provide various systems shown and described complete and in good operating condition whether or not these miscellaneous items are specifically described in the Specifications or shown on the Drawings.

B. Install all work in accordance with all applicable codes and prepare supplemental detail drawings and Shop Drawings reflecting purchased equipment requirements as necessary to obtain approval of authorities having jurisdiction over this Project.

C. Guarantee workmanship, materials, and performance of this Division's systems [in accordance with the requirements of the Contract Documents**.**

D. The following are specifically included without limiting the generality implied by the Drawings or Specifications:

1. HVAC systems including:

a. Common work results for HVAC.
b. General-duty valves for HVAC piping.

c. Identification for HVAC piping and equipment.
d. Testing, adjusting, and balancing for HVAC.
e. HVAC piping insulation.
f. Building Automation System.
g. Hydronic piping.
h. Fan-coil units.
i. Cabinet and Wall and ceiling unit heaters.

2. Apply firestopping to penetrations of fire-rated construction, to restore original fire-resistance rating of assembly, and as indicated in this Division's Specifications. Comply with requirements in Division 07 Section "Penetration Firestopping."
3. Submittal of forms and Drawings to review and permit agencies.
4. Submittals.
5. Record Documents.
6. Permits and Inspections: Apply for and obtain all required permits and inspections in accordance with Division 01; pay all related fees and charges.

1.3 ALLOWANCES

A. Refer to Division 01 Specifications.

1.4 UNIT PRICES

A. Refer to Division 01 Specifications.

1.5 PROJECT MANAGEMENT AND COORDINATION

A. General Requirements:

1. Drawings show general design arrangement; install work substantially as indicated. Verify exact location and elevations on job. DO NOT SCALE DRAWINGS.
2. Due to small scale of Drawings, it is not possible to indicate all offsets, fittings, changes in elevation, interferences, etc. Adjust installation of piping, ductwork, conduit, equipment locations, etc., to accommodate work with obstacles and interferences encountered.
3. Advise the Owner's Representative in timely manner of questions on equipment locations, heights, etc.
4. Any reasonable location adjustment of equipment and associated services requested by the Architect/Owner's Representative, prior to work being installed, shall be done with no cost added to the Contract.

B. Coordination with Other Divisions:

1. Provide to other Divisions any information related to their appropriate trade concerning the equipment or any work of this Contract in ample time to prevent delay in building progress.
2. Interference:

a. Thoroughly coordinate work with other Divisions and:

1) Determine exact route or location of each piece of equipment, associated services, etc., before fabrication and installation.
2) Maintain maximum headroom.
3) Obtain Engineer's review before installing any work below 7'-0" clear headroom in mechanical areas.
4) Install work of this Division so that all equipment is serviceable and operable.

b. Should Architect's details, field conditions, changes in equipment, or Shop Drawing information necessitate an important rearrangement, advise Architect and act in accordance with his directions.

C. Coordination with Drawings: Review all Drawings and if necessary, request copies of Shop Drawings to coordinate work. If potential conflict occurs between this Division's Drawings and another Drawing, advise Owner's Representative and Architect in writing. Do not proceed with work without written directive from Contract-designated authority.

D. Coordination Drawings:

1. Before construction work commences, subcontractors for all trades shall submit coordination drawings in the form of reproducible transparencies drawn at not less than 1/4 inch = 1 foot in scale, noting Contract work below floor slab and penetrating floor slab]. Such drawings will be required throughout all areas for all trades. These drawings shall show resolutions of trade conflicts in congested areas. All conduit routing for wiring etc., shall be dimensioned from column centerlines.
2. Coordination drawings are intended for the respective Contractor's use during construction and shall not be construed as replacing any Shop Drawings or Record Drawings required elsewhere in these Contract Documents. Generally, drawing details and sections are required only at places of conflict among trades. The drawings may be done on an area basis so as not to delay the overall project.
3. Submit coordinated drawings for review as Shop Drawings. The Owner's Representative's review of coordination drawings shall not relieve this Division from the responsibility for coordinating their work with the work of other trades nor shall it authorize any extra cost, omission, or deviation from the requirements of the Contract Documents. Any costs arising from errors or omissions in the coordination process shall be borne by this Division.

E. Scheduling and Procedure of Work:

1. The work of this Division shall be completed in accordance with Project schedule; otherwise, the Owner's Representative shall have the right to install, at this Division's expense, any temporary work of this Division necessary to meet the scheduled completion date.
2. As work occurs within or attached to existing structures:

a. Perform all work only on approved schedule.
b. Do not interfere with normal operation of existing systems.

c. Do not shut off any services without written authorization of Owner's Representative.
d. Do as much work as possible prior to the shutdown to minimize the downtime.
e. Make temporary connections as necessary to maintain schedule agreed upon, with no cost added to the Contract.

3. Proper work attire shall be worn at all times.
4. Refer to Division 01 Specifications for additional requirements, such as parking permits and identification badges.

1.6 SUBMITTALS

A. Supply submittals indicated in each Section of this Division's Specifications and in accordance with requirements of Division 01 Specifications. Supply separate submittals for each Section of Specifications.

B. Wiring Diagrams: Electrically operated equipment shall include factory-approved wiring diagram illustrating proper connections to be made between equipment and power and equipment and auxiliary controls (where applicable).

C. Clearly label each submittal with item name/description; Specifications' section, paragraph and/or subparagraph; and any pertinent Drawing detail reference information.

D. Submit field quality-control reports when indicated in Part 3 of Division's Specifications.

1.7 QUALITY REQUIREMENTS

A. Observation of the Work:

1. Architect/Engineer may make periodic visits to the job site to observe the general progress and quality of the work. Architect/Engineer will not make continuous or detailed on-site inspections to check the quality and/or quantity of work and will not be responsible for this Division's failure to carry out construction work in accordance with the Contract Documents, Project schedule, or unsound construction procedures or practices.

B. Conflict Requirements:

1. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

C. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

D. "Testing, adjusting, and balancing (TAB) shall be performed by an independent, certified TAB agency not affiliated with installing contractors."

1.8 REFERENCES

A. Industry Standards:

1. The following standards shall govern and shall constitute minimum requirements as approved. If the requirements of this Division's Specifications exceed those of the standards mentioned, this Division's Specifications shall govern.

a. Local and state building codes.
b. Local utility companies.
c. National Electrical Manufacturer's Association ("NEMA").
d. American Institute of Electronic and Electrical Engineers ("IEEE")
e. National Electrical Safety Code ("NESC").
f. National Electric Code ("NEC").
g. ETL, Factory Mutual ("FM"), or Underwriters Laboratories, Inc. ("UL"), approved or listed, wherever applicable to materials.
h. American National Standards Institute ("ANSI").
i. National Fire Protection Association ("NFPA").
j. Official Compilation of Codes, Rules and Regulations of the State of New York ("NYCRR") for education, health, and sanitary rules and regulations, including:

1) Chapter XXXIII – State Fire Prevention and Building Code Council, including:

a) Subchapter A – Uniform Fire Prevention and Building Code (Uniform Code):
(1) Uniform Fire Prevention and Building Code (Part 1219).
(2) Building Construction (Part 1221).
(3) Plumbing Systems (Part 1222).
(4) Mechanical Systems (Part 1223).
(5) Fuel Gas Equipment and Systems (Part 1224).
(6) Fire Prevention (Part 1225).
(7) Property Maintenance (Part 1226).
(8) Existing Buildings (Part 1227).
(9) The following documents by reference: 2025 Residential Code of New York State, 2025 Plumbing Code of New York State, 2025 Mechanical Code of New York State, 2025 Building Code of New York State, 2025 Fire Code of New York State, 2025 Existing Building Code of New York State, 2025 Fuel Gas Code of New York State, and 2025 Property Maintenance Code of New York State.

b) Subchapter B – State Energy Conservation Construction Code (Energy Code):
(1) State Energy Conservation Construction Code (Part 1240).

(2) The amended and updated edition of the Energy Code incorpor
(3) ted, by reference, the following publications:
(1.) 2025 Energy Conservation Construction Code of New York State (publication date: July 2025.
(2.) NYS ASHRAE 90.1-2025 – NYS version of the Energy Standard for Buildings Except Low-Rise Residential Buildings ("NYS ASHRAE 90.1-2025 ")

k. Federal Register Americans Disabilities Act ("ADA"); and ICC/ANSI A117.1, the Handicapped Accessibility Code.

B. Materials and Equipment:

1. Electrical devices, materials, and packaged equipment shall be listed and labeled by UL, FM, or ETL for the intended use and shall bear their label.
2. Plastic materials or equipment with plastic components cannot be installed or used in or as part of a building unless:

a. Such covered product complies with the requirements of Chapter 26 of the Building Code of New York State.
b. A report of such compliance has been filed with the Department of State in accordance with the Building Code of New York State.

C. Before submitting bid, consult above codes, regulations, and requirements and make all necessary provisions for same in bid.

1.9 TEMPORARY FACILITIES AND CONTROLS

A. Refer to Division 01 Specifications.

1.10 PRODUCT REQUIREMENTS

A. Refer to Division 01 Specifications.

B. The term "product" shall mean items obtained for incorporating into the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes terms "materials," "equipment," "systems," and terms of similar intent.

C. The Contract is based on products specified herein, shown on Drawings, and as authorized by addendum.

D. Ensure all products conform to the Drawings and Specifications with regard to space requirements, performance, capacity, configuration, accessories, and materials of construction.

E. Products furnished shall be new and, where used for similar purposes, of the same manufacturer. To the fullest extent possible, provide like products from a single source. If quantities from a single source cannot be provided, Architect/Engineer will make determination.

F. Where the term "provide" is indicated, it shall have the same meaning as "furnish and install." All products listed shall be furnished and installed unless specifically noted to the contrary.

G. Where the term "basis-of-design product," including manufacturer and model number or other designation, is indicated, intent is to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the Specifications. Bear responsibility and cost for changes made necessary by the use of products other than those of the basis-of-design product.

H. Where "Manufacturer" or "Product" is indicated with only one named manufacturer or one named product, provide the product of the named manufacturer or the listed product. Comparable products or substitutions are not permitted.

I. Justification for acceptance or rejection of unnamed products, unnamed manufacturers, comparable products, or product substitutions will not be demonstrated by the Architect/Engineer.

J. Delivery, Storage, and Handling:

1. Deliver, store, and handle materials as recommended by the manufacturer.
2. Handle and store materials in a manner which will not damage materials.
3. Deliver and store materials throughout floor areas and in locations designated by Owner's Representative. Provide blocking or pallets to prevent materials from becoming soiled.
4. Schedule deliveries with Owner's Representative prior to shipping.
5. Be available at site to receive deliveries as scheduled.
6. Hoist all materials as necessary to complete this Division's scope of work.

K. Warranties:

1. Refer to Sections of this Division's Specifications for specific warranties.
2. Refer to Division 01 Specifications for submittal of warranties.

1.11 EXECUTION

A. Examination of Premises and Existing Conditions:

1. Examine all existing conditions affecting compliance with Drawings and Specifications by visiting site.
2. Ascertain access to site, available storage, and delivery facilities.
3. Verify all governing dimensions at site.
4. Inspect all adjacent work.
5. Verify the location, sizes, and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services; HVAC utility piping and other utilities.
6. No consideration shall be given for alleged misunderstandings. Proceeding with the work indicates acceptance of existing conditions.

B. Roughing:

1. This Division's equipment shall be located generally as shown on Drawings; however, check actual field conditions to determine exact locations and avoid interference with other trades. Deviations from the Drawings proposed by this Division must be reviewed by the Owner's Representative before the changes are made. Work improperly installed due to lack of construction verification shall be corrected at the expense of this Division.
2. Before roughing for equipment furnished by others, obtain approved roughing drawings and exact location for each piece of equipment.
3. Obtain Drawings or proper information giving final locations of all wiring, piping, ductwork, and motor and control connections.
4. Unless otherwise detailed or specified:

    a. All services shall be concealed in wall, above ceilings, etc.
    b. Work shall be exposed only where approved by the Architect.
    c. Notify Owner's Representative and Architect if work cannot be concealed as intended.

C. Cutting and Patching:

1. General Contractor shall provide removals, cutting, patching, and replacement required for installation of the work in this Contract. All penetrations of rated assemblies shall comply with Penetration Firestopping.

    a. General Contractor shall provide patching for all existing openings caused by the removal of existing ducts, fixtures, equipment, piping, supports, etc.

D. Progress Cleaning: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1.12 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

A. Salvage of Existing Materials: Obtain from Owner's Representative a list of existing items being removed, to be delivered to on-site storage as directed. Remove from site and legally dispose of items not specifically noted on said list.

1.13 CLOSEOUT PROCEDURES

A. After all tests are made and installations pronounced satisfactory:

1. Thoroughly clean entire installation (both exposed surfaces and interiors) and leave in clean condition.
2. Remove all debris caused by work.
3. Promptly remove tools, surplus materials, and trailer when work is finally accepted.

B. Repair damage to wall and to ceiling surface treatments caused by airborne dirt and debris from within ductwork systems.

C. Lubrication:

1. Prior to final inspection and in the presence of Owner's Representative:

a. Lubricate motors and motor-driven equipment in accordance with manufacturer's recommendations.
b. Check for operation without objectionable noise and for correct rotational direction. If noise or vibration is transmitted to occupied portions of the building by piping, equipment, etc., make changes and additions with no cost added to the Contract.
c. Check motor protective devices for proper size.

2. Provide neat, typewritten list of lubricant for each motor and moving parts.

a. Frame under Plexiglas.
b. Mount as directed by Owner's Representative**.**
c. Include list in operating and maintenance manual.

D. Valve Tagging Chart:

1. Provide Plexiglas-covered and framed copies of valve tagging chart for mounting as directed by Owner's Representative.

E. Receipts for Loose Equipment:

1. Prior to request for final payment:

a. Deliver to Owner's Representative the following loose equipment:

1) Thermostat control knobs[from electric wall heaters].
2) Valve charts.
3) Control cabinet keys and any special tools needed to access/operate HVAC equipment.
4) List of passwords/codes for access to and use of control system/energy management system (EMS).

b. Obtain signed receipt for delivered loose equipment.

2. Include receipt in operations and maintenance manual.

F. Refer to Division 01 Specifications for additional information on Project closeout and cleanup.

1.14 OPERATION AND MAINTENANCE DATA

A. Submit 3 complete copies of operating and maintenance manuals for each building to the Owner's Representative 60 days prior to scheduled date of substantial completion. Noncompliance or incomplete submittal will be rejected and returned for resubmittal.

1. Photocopy paragraphs B and C below to be used a checklist for compliance with materials, format, and data.
2. Once items are compiled, place a checkmark in the brackets for items included and strike through the items that do not apply.
3. Submit checklist with operating and maintenance manuals.

B. The operating and maintenance manuals shall consist of and will be reviewed for the following format and contents. Submit O&M manuals in both hard copy and electronic PDF format. If Owner Representative/Construction Manager has an electronic O&M platform, upload to that system."

1. Binder:

   a. **[ ]**Three-ring, plain black, vinyl binder free of vendor/contractor logos, etc.
   b. **[ ]**Cover and spine (binder) identification including:

      1) **[ ]**Manual title: "OPERATION AND MAINTENANCE MANUAL."
      2) **[ ]**Owner.
      3) **[ ]**Project title.
      4) **[ ]**Owner's project number.
      5) **[ ]**Year of construction.
      6) **[ ]**Trade(s).
      7) **[ ]**Volume number and total number of volumes (e.g., Volume 1 of 2).

2. Contents:

   a. **[ ]**Project title page (enclosed in clear, transparent plastic sleeve) to match cover identification with at least one-third page blank for review stamp and comments.
   b. **[ ]**Project directory page (enclosed in a clear transparent plastic sleeve) including name, address, and telephone number of:

      1) **[ ]**Owner.
      2) **[ ]**Architect.
      3) **[ ]**Engineer.
      4) **[ ]**Contractor.
      5) **[ ]**Subcontractor.

   c. **[ ]**Table of contents (enclosed in a clear, transparent plastic sleeve) arranged to follow Specifications order (with format as list below):

      1) **[ ]**Warranty letter.
      2) **[ ]**Summary of scheduled maintenance.
      3) **[ ]**Lubrication summary.
      4) **[ ]**Valve charts.
      5) **[ ]**Replacement filter media and size summary.
      6) **[ ]**List of maintenance parts, repair/replacement parts, and recommended spare parts, including equipment name, part number, and suppliers (name, address, and phone number).
      7) **[ ]**Letters of certification for required system tests.

8) **[ ]**Include on table of contents the following information for each product:

Spec. Section Number	Equipment Description	Supplying Company	Local Representative	Telephone Number
230500	Widgets	Acme Company	John Doe	555-1212

d. **[ ]**Submittals as indicated in "Submittals" Article of this Section, including:

1) **[ ]**Approved copies of all submittals, including parts lists.
2) **[ ]**Material safety data sheets for:

a) **[ ]**Firestopping.
b) **[ ]**Insulations, facings, and adhesives.
c) **[ ]**Chemical treatment chemicals.
d) **[ ]**Duct sealants.
e) **[ ]**Anti-freeze loop chemicals.

3) **[ ]**Installation, operating, and maintenance instructions.
4) **[ ]**Wiring diagrams.
5) **[ ]**Warranties.
6) **[ ]**Test reports.

C. **[ ]**Product Identification:

1. **[ ]**Provide indexed cardstock dividers between each submittal group.
2. **[ ]**Arrange in an order corresponding to the original Project's Specifications.
3. **[ ]**Where cataloged data covers more than one item, highlight applicable sections and identify corresponding equipment as marked on Drawings.
4. **[ ]**Instructions shall include:

a. Time schedule for maintenance work (list each item of mechanical equipment requiring inspection, lubrication, or service) and description of the performance of such maintenance.
b. List of types of bearings for each piece of equipment with the type of lubricant required and frequency of lubrication.
c. Sequence of operating and/or flow diagrams for each of the systems, including emergency procedures.
d. Normal starting, operating, and shutdown procedures.

1.15 PROJECT RECORD DOCUMENTS

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record

documents for Owner's Representative's, Architect's, and/or Engineer's reference during normal working hours.

C. Record Drawings:

1. Submit Contract Drawings and Shop Drawings in both hard copy and electronic PDF format. If Owner Representative/Construction Manager has an electronic platform, upload to that system, incorporating new and revised drawings as modifications are issued.
2. Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

    a. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

        1) Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
        2) Accurately record information in an acceptable drawing technique.
        3) Record data as soon as possible after obtaining it.
        4) Record and check the markup before enclosing concealed installations.
        5) Cross-reference record prints to corresponding archive photographic documentation.

    b. Content: Types of items requiring marking include, but are not limited to, the following:

        1) Dimensional changes to Drawings.
        2) Revisions to details shown on Drawings.
        3) Locations and depths of underground utilities.
        4) Revisions to routing of piping and conduits.
        5) Revisions to electrical circuitry pertaining to the work of this Contract.
        6) Actual equipment locations.
        7) Locations of concealed internal utilities.
        8) Duct size and routing.
        9) Locations of terminal units.
        10) Locations of isolation valves, balance valves, drain valves, air vents.
        11) Locations of sensors for temperatures, pressures, smoke, carbon monoxide, and carbon dioxide.
        12) Locations of fire, smoke, and volume dampers.
        13) Changes made by Change Order or Construction Change Directive.
        14) Changes made following Architect's written orders.
        15) Details not on the original Contract Drawings.
        16) Field records for variable and concealed conditions.
        17) Record information on the Work that is shown only schematically.

c. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
d. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
e. Mark important additional information that was either shown schematically or omitted from original Drawings.
f. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

3. Submittals: Comply with Division 01 Specifications and the following:

a. Submit Record Drawings as follows:

1) Initial Submittal:

a) Submit Record Drawings and Specifications in searchable PDF format.

2) Final Submittal:

a) At the end of Project and after incorporating Engineer's review comments, submit Record Drawings and Specifications in searchable PDF format.

b. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1) Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include the following identification on cover sheets.
2) PDFs: Organize into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification (i.e., Drawing Number).
3) Identification: As follows:

a) Project name.
b) Date.
c) Designation "PROJECT RECORD DRAWINGS."
d) Name of Architect.
e) Name of Contractor.

D. Record Specifications: Comply with Division 01 Specifications and the following:

1. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

a. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

b. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
c. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
d. Note related Change Orders, record Product Data, and record Drawings where applicable.

2. Submittal: Submit Record Drawings and Specifications in searchable PDF format. If Owner requires, provide upload to approved electronic project platform Identification shall be as stated hereinbefore for Record Drawings.

E. Refer to Division 01 Specifications.

1.16 DEMONSTRATION AND TRAINING

A. Owner's designated operating personnel shall be instructed in the care and operation of the systems in accordance with manufacturer's instructions and as indicated in these Specifications.

B. Coordinate instruction schedule with Owner's operations. Notify Owner's personnel in advance of training. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

1.17 WORK RELATED TO ASBESTOS AND WORK IN ASBESTOS-CONTAMINATED AREAS

A. Portions of the existing general construction are believed to be constructed with asbestos-containing materials.

B. Do not disturb such materials.

C. It is understood that a separate contract has been, or will be, issued for the abatement of portions of the asbestos-containing materials.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION 23 00 10

SECTION 23 05 00 - COMMON WORK RESULTS FOR HVAC

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Motors.
2. Packed expansion joints.
3. Packless expansion joints.
4. Grooved-joint expansion joints.
5. Alignment guides and anchors.
6. Sleeves without waterstop.
7. Sleeves with waterstop.
8. Stack-sleeve fittings.
9. Sleeve-seal systems.
10. Grout.
11. Silicone sealants.
12. Escutcheons.
13. Thermometers, bimetallic actuated.
14. Thermometers, filled system.
15. Thermometers, liquid in glass.
16. Thermometers, light activated.
17. Duct-thermometer mounting brackets.
18. Thermowells.
19. Pressure gauges, dial type.
20. Gauge attachments.
21. Test plugs.
22. Test-plug kits.
23. Sight flow indicators.
24. Flowmeters.
25. Thermal-energy meters.

1.2 DEFINITIONS

A. Existing Piping To Remain: Existing piping that is not to be removed and that is not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 ACTION SUBMITTALS

A. Product Data:

1. For each type of product, excluding motors which are included in Part 1 of HVAC equipment Sections.

a. Include construction details, material descriptions, and dimensions of individual components, and finishes.
b. Include operating characteristics and furnished accessories.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of meter.

B. Welding certificates.

C. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For each type of expansion joint, meter, and gauge to include in operation and maintenance manuals.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.1/D1.1M.

B. Pipe and Pressure-Vessel Welding Qualifications: Qualify procedures and operators in accordance with 2021 ASME Boiler and Pressure Vessel Code, Section IX.

1.7 COORDINATION

A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:

1. Motor controllers.
2. Torque, speed, and horsepower requirements of the load.
3. Ratings and characteristics of supply circuit and required control sequence.
4. Ambient and environmental conditions of installation location.

PART 2 - PRODUCTS

2.1 MOTORS

A. Motor Requirements, General:

1. Content includes motors for use on alternating-current power systems of up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.

2. Comply with requirements in this Section except when stricter requirements are specified in equipment schedules or Sections.
3. Comply with NEMA MG 1 unless otherwise indicated.
4. Comply with IEEE 841 for severe-duty motors.

B. Motor Characteristics:

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

C. Polyphase Motors:

1. Description: NEMA MG 1, Design B, medium induction motor.
2. Efficiency: Premium Efficient, as defined in NEMA MG 1.
3. Service Factor: 1.15.
4. Multispeed Motors: Variable torque.

    a. For motors with 2:1 speed ratio, consequent pole, single winding.
    b. For motors with other than 2:1 speed ratio, separate winding for each speed.

5. Multispeed Motors, Two Winding: Separate winding for each speed.
6. Rotor: Random-wound, squirrel cage.
7. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading.
8. Temperature Rise: Match insulation rating.
9. Insulation: Class F.
10. Code Letter Designation:

    a. Motors 15 Hp and Larger: NEMA starting Code F or Code G.
    b. Motors Smaller Than 15 Hp: Manufacturer's standard starting characteristic.

11. Enclosure Material: Cast iron for motor frame sizes 324T and larger; rolled steel for motor frame sizes smaller than 324T.

D. Additional Requirements for Polyphase Motors:

1. Motors Used with Reduced-Voltage and Multispeed Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.
2. Motors Used with Variable-Frequency Controllers: Ratings, characteristics, and features coordinated with and approved by controller manufacturer.

    a. Windings: Copper magnet wire with moisture-resistant insulation varnish, designed and tested to resist transient spikes, high frequencies, and short time-rise pulses produced by pulse-width-modulated inverters.
    b. Premium-Efficient Motors: Class B temperature rise; Class F insulation.

c. Inverter-Duty Motors: Class F temperature rise; Class H insulation.
d. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.

3. Severe-Duty Motors: Comply with IEEE 841, with 1.15 minimum service factor.

E. Single-Phase Motors:

1. Motors larger than 1/20 hp must be one of the following, to suit starting torque and requirements of specific motor application:

a. Permanent-split capacitor.
b. Split phase.
c. Capacitor start, inductor run.
d. Capacitor start, capacitor run.

2. Multispeed Motors: Variable-torque, permanent-split-capacitor type.
3. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.
4. Motors 1/20 hp and Smaller: Shaded-pole type.
5. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device will automatically reset when motor temperature returns to normal range.

F. Electronically Commutated Motors:

1. Microprocessor-Based Electronic Control Module: Converts 120 V single-phase AC power to three-phase DC power to operate the brushless DC motor.
2. Three-phase power motor module with permanent magnet rotor.
3. Circuit board or digital speed controller/LED display.
4. Building Automation System Interface: Via AC voltage signal DC voltage signal or Digital Serial Interface (DSI).

2.2 METERS AND GAUGES FOR HVAC PIPING

A. Thermometers, Filled System - Direct-Mounted, Plastic-Case, Vapor-Actuated:

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. Ashcroft Inc.
b. Miljoco Corporation.
c. REOTEMP Instrument Corporation.

2. Source Limitations: Provide filled-system, direct-mounted, plastic-case, vapor-actuated thermometers from single manufacturer.

3. Standard: ASME B40.200.
4. Case: Sealed type, plastic; 4-1/2-inch nominal diameter.
5. Element: Bourdon tube or other type of pressure element.
6. Movement: Mechanical, with link to pressure element and connection to pointer.
7. Dial: Nonreflective aluminum with permanently etched scale markings graduated in deg F.
8. Pointer: Dark-colored metal.
9. Window: Glass or plastic.
10. Ring: Metal or plastic.
11. Connector Type(s): Union joint, adjustable, 180 degrees in vertical plane, 360 degrees in horizontal plane, with locking device; with ASME B1.1 screw threads.
12. Thermal System: Liquid-filled bulb in copper-plated steel, aluminum, or brass stem and of length to suit installation.

    a. Design for Air-Duct Installation: With ventilated shroud.
    b. Design for Thermowell Installation: Bare stem.

13. Accuracy: Plus or minus 1 percent of scale range.

B. Thermowells:

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

C. Pressure Gauges, Dial Type - Direct Mounted, Metal Case:

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. Ashcroft Inc.
    b. Flo Fab Inc.
    c. Miljoco Corporation.
    d. Trerice, H. O. Co.
    e. Winters Instruments - U.S.

2. Source Limitations: Provide dial-type, direct-mounted, metal-case pressure gauges from single manufacturer.
3. Standard: ASME B40.100.
4. Case: Solid-front, pressure-relief type(s); cast aluminum or drawn steel; 4-1/2-inch nominal diameter.
5. Pressure-Element Assembly: Bourdon tube.
6. Pressure Connection: Brass, with NPS 1/4, ASME B1.20.1 pipe threads and bottom-outlet type unless back-outlet type is indicated.
7. Movement: Mechanical, with link to pressure element and connection to pointer.
8. Dial: Nonreflective aluminum with permanent scale markings graduated in psi.
9. Pointer: Dark-colored metal.
10. Window: acrylic plastic.
11. Ring: Metal, Brass, or Stainless steel.
12. Accuracy: Grade B, plus or minus 2 percent of middle half of span.

D. Gauge Attachments:

1. Snubbers: ASME B40.100, brass; with NPS 1/4 NPS 1/2, ASME B1.20.1 pipe threads and piston or porous-metal-type surge-dampening device. Include extension for use on insulated piping.
2. Siphons: Loop-shaped section of brass stainless steel steel pipe with NPS 1/4 pipe threads.
3. Valves: Brass ball, with NPS 1/4, ASME B1.20.1 pipe threads.

E. Test Plugs:

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. Miljoco Corporation.
    b. Trerice, H. O. Co.
    c. Weiss Instruments, Inc.
    d. Weksler Glass Thermometer Corp.

2. Source Limitations: Provide test plugs from single manufacturer.
3. Description: Test-station fitting made for insertion in piping tee fitting.
4. Body: Brass or stainless steel with core inserts and gasketed and threaded cap. Include extended stem on units to be installed in insulated piping.
5. Thread Size: NPS 1/4, ASME B1.20.1 pipe thread.
6. Minimum Pressure and Temperature Rating: 500 psig at 200 deg F.
7. Core Inserts: Chlorosulfonated polyethylene synthetic or EPDM self-sealing rubber.

PART 3 - EXECUTION

3.1 INSTALLATION OF METERS AND GAUGES

A. Install thermowells with socket extending to center of pipe and in vertical position in piping tees.

B. Install thermowells of sizes required to match thermometer connectors. Include bushings if required to match sizes.

C. Install thermowells with extension on insulated piping.

D. Fill thermowells with heat-transfer medium.

E. Install direct-mounted thermometers in thermowells and adjust vertical and tilted positions.

F. Install direct-mounted pressure gauges in piping tees with pressure gauge located on pipe at the most readable position.

G. Install valve and snubber in piping for each pressure gauge for fluids (except steam).

H. Install test plugs in piping tees.

I. Install thermometers in the following locations:

1. As Detailed.

J. Install pressure gauges in the following locations:

1. As Detailed.

3.2 CONNECTIONS

A. Install meters and gauges adjacent to machines and equipment to allow space for service and maintenance of meters, gauges, machines, and equipment as detailed.

3.3 ADJUSTING

A. Adjust faces of meters and gauges to proper angle for best visibility.

3.4 THERMOMETER SCALE-RANGE APPLICATION

A. Scale Range for Heating, Hot-Water Piping:

1. 30 to 240 deg F.

3.5 PRESSURE-GAUGE SCALE-RANGE APPLICATION

A. Scale Range for Glycol / Water Piping:

1. 0 to 160 psi.

END OF SECTION 23 05 00

SECTION 23 05 23 - GENERAL-DUTY VALVES FOR HVAC PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Ball valves.

1.2 DEFINITIONS

A. CWP: Cold working pressure.

B. EPDM: Ethylene-propylene-diene monomer.

C. FKM: Fluoroelastomer.

D. NBR: Nitrile butadiene rubber (also known as "Buna-N").

E. NRS: Nonrising stem.

F. OS&Y: Outside screw and yoke.

G. PTFE: Polytetrafluoroethylene.

H. RPTFE: Reinforced polytetrafluoroethylene.

I. RS: Rising stem.

J. SWP: Steam working pressure.

1.3 ACTION SUBMITTALS

A. Product data.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. ASME Compliance:

   1. ASME B1.20.1 for threads for threaded-end valves.
   2. ASME B16.18 for cast-copper solder-joint connections.

3. ASME B16.22 for wrought copper and copper-alloy solder-joint connections.
4. ASME B31.9 for building services piping valves.

B. Provide bronze valves made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are unacceptable.

C. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

D. Valve Sizes: Same as upstream piping unless otherwise indicated.

E. Valve Bypass and Drain Connections: MSS SP-45.

F. Valve Actuator Type:

1. Gear Actuator: For quarter-turn ball valves NPS 4 and larger.
2. Hand Lever: For quarter-turn ball valves smaller than NPS 4.

G. Valves in Insulated Piping:

1. Provide 2-inch extended neck stems.
2. Provide extended operating handles with nonthermal-conductive covering material and protective sleeves that allow operation of valves without breaking vapor seals or disturbing insulation.
3. Provide memory stops that are fully adjustable after insulation is applied.

2.2 BALL VALVES

A. Ball Valves, Threaded or Soldered Ends - Brass, Two Piece with Full Port and Stainless Steel Trim:
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. Apollo.
b. Powell.
c. Milwaukee.
d. NIBCO.
e. Jamesbury.
f. Watts.

2. Standard: MSS SP-110.
3. SWP Rating: 150 psig.
4. CWP Rating: 600 psig.
5. Body Design: Two piece.
6. Body Material: Forged brass.
7. Ends: Threaded or soldered. See Part 3 ball valve schedule articles.
8. Seats: PTFE.
9. Stem: Stainless steel.

10. Ball: Stainless steel, vented.
11. Port: Full.

PART 3 - EXECUTION

3.1 INSTALLATION OF VALVES

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Provide support of piping adjacent to valves such that no force is imposed upon valves.

C. Locate valves for easy access and where not blocked by equipment, other piping, or building components.

D. For valves in horizontal piping, install valves with stem at or above center of pipe.

E. Install valves in position that does not project into aisles or block access to other equipment.

F. Install valves in position to allow full stem and actuator or manual operator movement.

G. Verify that joints of each valve have been properly installed and sealed to ensure that there is no leakage or damage.

H. Valve Tags: Comply with requirements for valve tags and schedules in Section 23 05 53 "Identification for HVAC Piping and Equipment."

I. Adhere to manufacturer's written installation instructions. When soldering or brazing valves, do not heat valves above maximum permitted temperature. Do not use solder with melting point temperature above valve of manufacturer's written recommended maximum.

3.2 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valves with specified SWP classes or CWP ratings are unavailable, the same types of valves with higher SWP classes or CWP ratings may be substituted.

B. Select valves with the following end connections:

1. For Copper Tubing, NPS 2 (DN 50) and Smaller: Threaded ends except where solder-joint valve-end option is indicated in valve schedules.

3.3 VALVE SCHEDULE (HEATING AND COOLING)

A. Pipe NPS 2 and Smaller:

1. Bronze Valves: May be provided with solder-joint ends instead of threaded ends.
2. Ball Valves: Two-piece, full port, bronze stainless-steel trim.
3. Check Valves: Class 150, bronze body suitable for hydronic heating service.

END OF SECTION 23 05 23

SECTION 23 05 53 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Pipe labels.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For color, letter style, and graphic representation required for each identification material and device.

C. Equipment-Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Plastic Labels for Equipment:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Brady Corporation.
    b. Craftmark Pipe Markers.
    c. Marking Services, Inc.
    d. Seton Identification Products; a Brady Corporation company.

2. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, with predrilled holes for attachment hardware.
3. Letter and Background Color: As indicated for specific application under Part 3.
4. Maximum Temperature: Able to withstand temperatures of up to 160 deg F.
5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
6. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances of up to 72 inches, and proportionately larger

lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

7. Fasteners: Stainless steel rivets or self-tapping screws.
8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Label Content: Include equipment's Drawing designation or unique equipment number..

2.2 PIPE LABELS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Brady Corporation.
2. Craftmark Pipe Markers.
3. Marking Services Inc.
4. Seton Identification Products; a Brady Corporation company.

B. General Requirements for Manufactured Pipe Labels: Preprinted, color coded, with lettering indicating service and showing flow direction in accordance with ASME A13.1.

C. Letter and Background Color: As indicated for specific application under Part 3.

D. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.

E. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

F. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings. Also include:

1. Pipe size.
2. Flow-Direction Arrows: Include flow-direction arrows on main distribution piping. Arrows may be either integral with label or applied separately.

2.3 VALVE TAGS

A. Description: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers.

1. Tag Material: Brass, 0.04-inch, stainless steel, 0.024-inch, aluminum, 0.031-inch, or anodized aluminum, 0.031-inch minimum thickness, with predrilled or stamped holes for attachment hardware.
2. Fasteners: Brass wire, link chain or beaded chain or S-hook.

B. Letter and Background Color: As indicated for specific application under Part 3.

C. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or

space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.

1. Include valve-tag schedule in operation and maintenance data.

PART 3 - EXECUTION

3.1 PREPARATION

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

3.2 INSTALLATION, GENERAL REQUIREMENTS

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with locations of access panels and doors.

C. Install identifying devices before installing acoustical ceilings and similar concealment.

D. Locate identifying devices so that they are readily visible from the point of normal approach.

3.3 INSTALLATION OF EQUIPMENT LABELS, WARNING SIGNS, AND LABELS

A. Permanently fasten labels on each item of mechanical equipment.

B. Sign and Label Colors:

1. White letters on an ANSI Z535.1 safety-blue background.

C. Locate equipment labels where accessible and visible.

3.4 INSTALLATION OF PIPE LABELS

A. Install pipe labels showing service and flow direction with permanent adhesive on pipes.

B. Pipe-Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:

1. Within 3 ft. of each valve and control device.
2. At access doors, manholes, and similar access points that permit view of concealed piping.

3. Within 3 ft. of equipment items and other points of origination and termination.
4. Spaced at maximum intervals of 50 ft. along each run. Reduce intervals to 25 ft. in areas of congested piping, ductwork, and equipment.

C. Do not apply plastic pipe labels or plastic tapes directly to bare pipes conveying fluids at temperatures of 125 deg F or higher. Where these pipes are to remain uninsulated, use a short section of insulation or use stenciled labels.

D. Flow-Direction Arrows: Use arrows to indicate direction of flow in pipes, including pipes where flow is allowed in both directions.

E. Pipe-Label Color Schedule:

1. Heating Piping: Black letters on an ANSI Z535.1 safety-orange background.

3.5 INSTALLATION OF VALVE TAGS

A. Install tags on valves and control devices in piping systems, except check valves, valves within factory-fabricated equipment units, shutoff valves, and HVAC terminal devices and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule in the operating and maintenance manual.

B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in "Valve-Tag Size and Shape" Subparagraph below.

1. Valve-Tag Size and Shape:

a. 1-1/2 inches, round.

END OF SECTION 23 05 53

SECTION 23 07 19 - HVAC PIPING INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes insulation for HVAC piping systems.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory and field applied, if any).

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
2. Detail insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

1.4 QUALITY ASSURANCE

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

1.5 DELIVERY, STORAGE, AND HANDLING

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

1.6 COORDINATION

A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 23 05 29 "Hangers and Supports for HVAC Piping and Equipment."

B. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

1.7 SCHEDULING

A. Schedule insulation application after pressure testing systems. Insulation application may begin on segments that have satisfactory test results.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products in accordance with ASTM E84 by a testing agency acceptable to authority having jurisdiction. Factory label insulation, jacket materials, adhesive, mastic, tapes, and cement material containers with appropriate markings of applicable testing agency.

1. All Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.

2.2 INSULATION MATERIALS

A. Comply with requirements in "Piping Insulation Schedule" specified in Part 3 of this section.

B. Products do not contain asbestos, lead, mercury, or mercury compounds.

C. Mineral Wool, Preformed Pipe: Mandrel-wound mineral wool fibers bonded with a thermosetting resin, unfaced; suitable for maximum use temperature up to 1200 deg F in accordance with ASTM C447. Comply with ASTM C547.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Johns Manville; a Berkshire Hathaway company.
    b. Owens Corning.
    c. ROCKWOOL Technical Insulation.

2. Preformed Pipe Insulation: Type II, Grade A with factory-applied ASJ.
3. Fabricated shapes in accordance with ASTM C450 and ASTM C585.

2.3 ADHESIVES

A. Materials are compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.

B. ASJ Adhesive: Comply with MIL-A-3316C, Class 2, Grade A, for bonding insulation jacket lap seams and joints.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Childers Brand; H. B. Fuller Construction Products.
b. Foster Brand; H. B. Fuller Construction Products.
c. Mon-Eco Industries, Inc.

2.4 SEALANTS

A. Materials are as recommended by the insulation manufacturer and are compatible with insulation materials, jackets, and substrates.

B. Joint Sealants:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Childers Brand; H. B. Fuller Construction Products.
b. Foster Brand; H. B. Fuller Construction Products.
c. Mon-Eco Industries, Inc.
d. Owens Corning.

2. Permanently flexible, elastomeric sealant.

a. Service Temperature Range: Minus 150 to plus 250 deg F.
b. Color: White or gray.

2.5 FACTORY-APPLIED JACKETS

A. Insulation systems below indicate factory-applied jackets on various applications. Factory-applied jackets shall include vapor-barrier systems for all below-ambient-temperature applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C1136, Type I.

2.6 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C1136.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. 3M Industrial Adhesives and Tapes Division.
    b. Avery Dennison Corporation, Specialty Tapes Division.
    c. Ideal Tape Co., Inc., an American Biltrite Company.
    d. Knauf Insulation.

2. Width: 3 inches.
3. Thickness: 11.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.

1. Verify that systems to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

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

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping, including fittings, valves, and specialties.

B. Install insulation materials, forms, vapor barriers or retarders, jackets, and of thicknesses required for each item of pipe system, as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, compress, or otherwise damage insulation or jacket.

D. Install insulation with longitudinal seams at top and bottom (12 o'clock and 6 o'clock positions) of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.

G. Keep insulation materials dry during storage, application, and finishing. Replace insulation materials that get wet during storage or in the installation process before being properly covered and sealed in accordance with the Contract Documents.

H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

I. Install insulation with least number of joints practical.

J. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

K. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth, but not to the extent of creating wrinkles or areas of compression in the insulation.
2. Cover circumferential joints with 3-inch-wide strips, of same material as insulation jacket. Secure strips with adhesive.
3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap.
4. Cover joints and seams with tape, in accordance with insulation material manufacturer's written instructions, to maintain vapor seal.

L. Cut insulation in a manner to avoid compressing insulation.

M. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

N. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere and seal patches in similar fashion to butt joints.

O. For above-ambient services, do not install insulation to the following:

1. Vibration-control devices.
2. Testing agency labels and stamps.
3. Nameplates and data plates.

3.4 PENETRATIONS

A. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

B. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.

1. Comply with requirements in Section 23 00 10 "General Requirements for HVAC" for firestopping and fire-resistive joint sealers.

3.5 GENERAL PIPE INSULATION INSTALLATION

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

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

1. Install insulation over fittings, valves, strainers, flanges, mechanical couplings, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
2. Insulate pipe elbows using prefabricated fitting insulation and fitting covers made from same material and density as that of adjacent pipe insulation. Each piece is butted tightly against adjoining piece and bonded with adhesive.
3. Insulate tee fittings with prefabricated fitting insulation and fitting covers of same material and thickness as that used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
4. Insulate valves using prefabricated fitting insulation and fitting covers of same material, density, and thickness as that used for adjacent pipe. Overlap adjoining pipe insulation by not less than 2 times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
5. Insulate unions using oversized preformed pipe insulation to fit. Overlap adjoining pipe insulation by not less than two times the insulation thickness or one pipe diameter, whichever is greater..

3.6 INSTALLATION OF MINERAL WOOL PIPE INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each section of preformed pipe insulation in accordance with the insulation manufacturer's recommendations without deforming the insulation.

B. Insulation Installation on Pipe Fittings and Elbows:

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

C. Insulation Installation on Valves and Pipe Specialties:

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

3.7 PIPING INSULATION SCHEDULE, GENERAL

A. Heating-Hot-Water Supply and Return, 200 Deg F (93 Deg C) and Below:

1. NPS 1-1/4 and Smaller: Insulation shall be the following:
   a. Mineral-Fiber, Preformed Pipe, Type I: 1-1/2 inches thick.
2. NPS 1-1/2: Insulation shall and Larger: Insulation shall be the following:
   a. Mineral-Fiber, Preformed Pipe, Type I: 2 inches (50 mm) thick.

3.8 INDOOR, FIELD-APPLIED JACKET SCHEDULE

A. Install wraps over all below ambient services piping insulation to maintain continuous vapor barrier.

B. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.

C. If more than one material is listed, selection from materials listed is Contractor's option.

D. Piping, Exposed (e.g. mechanical rooms, occupied spaces, etc.):

1. PVC: 30 mils thick.

END OF SECTION 23 07 19

SECTION 23 21 13 - HYDRONIC PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Copper tube and fittings.
2. Piping joining materials.
3. Dielectric fittings.

PART 2 - PRODUCTS

2.1 COPPER TUBE AND FITTINGS

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

B. Cast-Copper, Solder-Joint Fittings: ASME B16.18 pressure fittings. Do not use solder joints on pipe sizes greater than NPS 4.

C. Wrought-Copper, Solder-Joint Fittings: ASME B16.22 pressure fittings. Do not use solder joints on pipe sizes greater than NPS 4.

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

E. Wrought-Copper Unions: ASME B16.22.

2.2 PIPING JOINING MATERIALS

A. Solder Filler Metals: ASTM B32, lead-free alloys.

B. Flux: ASTM B813, water flushable.

2.3 DIELECTRIC FITTINGS

A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.

B. Dielectric Unions:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. A.Y. McDonald Mfg. Co.
    b. Capitol Manufacturing Company.
    c. GF Piping Systems: Georg Fischer LLC.
    d. HART Industrial Unions, LLC.
    e. Jomar Valve.
    f. Matco-Norca.
    g. Watts Water Technologies; a Watts company.
    h. Wilkins.
    i. Zurn Industries, LLC.

2. Description:

    a. Standard: ASSE 1079.
    b. Pressure Rating: 125 psig minimum at 180 deg F.
    c. End Connections: Solder-joint copper alloy and threaded ferrous.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS

A. Water/Glycol Piping, Aboveground, NPS 2 and Smaller, to Be Any of the Following:

1. Type L, drawn-temper copper tubing, wrought-copper fittings, and soldered joints.

3.2 INSTALLATION OF PIPING

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping to permit valve servicing.

F. Install piping free of sags and bends.

G. Install fittings for changes in direction and branch connections.

H. Install piping to allow application of insulation.

I. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.

J. Install piping at a uniform grade of 0.2 percent upward in direction of flow.

K. Install valves according to the following:

1. Section 23 05 23 - General Duty Valves for HVAC

L. Install unions in piping, NPS 2 and smaller, adjacent to valves, at final connections of equipment, and elsewhere as indicated.

M. Install shutoff valve immediately upstream of each dielectric fitting.

N. Comply with requirements in Section 23 05 53 "Identification for HVAC Piping and Equipment" for identifying piping.

3.3 JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs.

B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

C. Soldered Joints: Apply ASTM B813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints in accordance with ASTM B828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B32.

3.4 INSTALLATION OF DIELECTRIC FITTINGS

A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.

B. Dielectric Fittings for NPS 2 and Smaller: Use dielectric unions.

3.5 INSTALLATION OF HANGERS AND SUPPORTS

A. Comply with requirements in Section 23 05 29 "Hangers and Supports for HVAC Piping and Equipment" for hangers, supports, and anchor devices.

B. Install hangers for copper tubing and steel piping, with maximum horizontal spacing and minimum rod diameters, to comply with NYS Mechanical Code (based on IMC 2020), MSS SP-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

C. Support horizontal piping within 12 inches of each fitting and coupling.

D. Support vertical runs of copper tubing to comply with NYS Mechanical Code (based on IMC 2020), MSS SP-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

3.6 TERMINAL EQUIPMENT CONNECTIONS

A. Sizes for supply and return piping connections are to be as shown on Drawings.

B. Install control valves in accessible locations close to connected equipment.

3.7 IDENTIFICATION

A. Identify system components. Comply with requirements for identification materials and installation in Section 23 05 53 "Identification for HVAC Piping and Equipment."

3.8 SYSTEM STARTUP

A. Perform the following before operating the system:
1. Open manual valves fully.
2. Inspect pumps for proper rotation.
3. Set makeup pressure-reducing valves for required system pressure.
4. Inspect air vents at high points of system and determine if all are installed and operating freely (automatic type), or bleed air completely (manual type).
5. Set temperature controls so all coils are calling for full flow.
6. Inspect and set operating temperatures of hydronic equipment, such as boilers, chillers, to specified values.
7. Verify lubrication of motors and bearings.
8. Fill system with fresh water and add liquid alkaline compound with emulsifying agents and detergents to remove grease and petroleum products from piping. Circulate solution for a minimum of 24 hours, drain, clean strainer screens, and refill with fresh water.
9. Fill systems that have antifreeze or glycol solutions with the following concentrations:

    a. Heating Piping: Minimum of 30 percent propylene glycol.

10. Assist Owner’s water treatment consultant with installing chemicals.

3.9 FIELD QUALITY CONTROL

A. Prepare hydronic piping in accordance with ASME B31.9 and as follows:

1. Leave joints, including welds, uninsulated and exposed for examination during test.
2. Provide temporary restraints for expansion joints that cannot sustain reactions due to test pressure. If temporary restraints are impractical, isolate expansion joints from testing.

3. Flush hydronic piping systems with clean water; then remove and clean or replace strainer screens.
4. Isolate equipment from piping. If a valve is used to isolate equipment, its closure is to be capable of sealing against test pressure without damage to valve.
5. Install pressure-relief valve, set at a pressure no more than one-third higher than test pressure, to protect against damage by expanding liquid or other source of overpressure during test.

B. Perform one of the following tests on hydronic piping:

1. Hydrostatic Test Pressure:

a. Use ambient-temperature water as a testing medium unless there is risk of damage due to freezing. Another liquid that is safe for workers and compatible with piping may be used.
b. While filling system, use vents installed at high points of system to release air. Use drains installed at low points for complete draining of test liquid.
c. Isolate expansion tanks and determine that hydronic system is full of water.
d. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the system's working pressure. Test pressure is not to exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength or 1.7 times the "SE" value in Appendix A in ASME B31.9.
e. After hydrostatic test pressure has been applied for at least 60 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks. There is no leakage allowance for steel or copper piping systems. After a minimum of 60 minutes under pressure, a passing test is indicated if no visual leak is observed, and the test pressure does not reduce by more than 5% during the 60 minute testing phase.

2. Prepare written report of testing.

END OF SECTION 23 21 13

SECTION 23 82 39.13 - CABINET UNIT HEATERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes cabinet unit heaters with centrifugal fans and heating coils.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics, furnished specialties, and accessories.

B. Shop Drawings:

1. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Include location and size of each field connection.
3. Include details of anchorages and attachments to structure and to supported equipment.
4. Include equipment schedules to indicate rated capacities, operating characteristics, furnished specialties, and accessories.
5. Indicate location and arrangement of piping valves and specialties.
6. Wiring Diagrams: Power, signal, and control wiring.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Airtherm; a Mestek company.

2. Dunham-Bush.
3. Trane.
4. Vulcan.

2.2 DESCRIPTION

A. Factory-assembled and -tested unit complying with AHRI 440.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.3 PERFORMANCE REQUIREMENTS

A. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."

B. ASHRAE/IESNA 90.1 Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6 - "Heating, Ventilating, and Air-Conditioning."

2.4 COIL SECTION INSULATION

A. Insulation Materials: ASTM C1071; surfaces exposed to airstream shall have erosion-resistant coating to prevent erosion of glass fibers.

1. Thickness: 1/2 inch.
2. Thermal Conductivity (k-Value): 0.26 Btu x in./h x sq. ft. at 75 deg F mean temperature.
3. Fire-Hazard Classification: Maximum flame-spread index of 25 and smoke-developed index of 50 when tested according to ASTM E84.
4. Adhesive: Comply with ASTM C916 and with NFPA 90A or NFPA 90B.
5. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

2.5 CABINETS

A. Material: Steel with powder-coat enamel finish with manufacturer's standard paint, in color selected by Architect.

1. Vertical Unit, Exposed Front Panels: Minimum 0.0528-inch-thick sheet steel, removable panels with channel-formed edges secured with tamperproof cam fasteners.
2. Horizontal Unit, Exposed Bottom Panels: Minimum 0.0528-inch-thick sheet steel, removable panels secured with tamperproof cam fasteners and safety chain.
3. Recessed Flanges: Steel, finished to match cabinet.
4. Control Access Door: Key operated.
5. Base: Minimum 0.0528-inch-thick steel, finished to match cabinet, 4 inches high with leveling bolts.
6. Extended Piping Compartment: 8-inch- wide piping end pocket.

2.6 FILTERS

A. Minimum Efficiency Reporting Value and Average Arrestance": According to ASHRAE 52.2.

B. Minimum Efficiency Reporting Value: According to ASHRAE 52.2.

C. Material: Pleated cotton-polyester media, MERV 7.

2.7 COILS

A. Heating Coil: Copper tube, with mechanically bonded aluminum fins spaced no closer than 0.1 inch and rated for a minimum working pressure of 200 psig and a maximum entering-water temperature of 220 deg F. Include manual air vent and drain.

2.8 CONTROLS

A. Fan and Motor Board: Removable.

1. Fan: Forward curved, high static, double width, centrifugal, directly connected to motor; thermoplastic or painted-steel wheels and aluminum, painted-steel, or galvanized-steel fan scrolls.
2. Motor: Permanently lubricated, multispeed; resiliently mounted on motor board. Comply with requirements in Section 23 05 13 "Common Motor Requirements for HVAC Equipment."
3. Wiring Terminations: Connect motor to chassis wiring with plug connection.

B. Control devices and operational sequences are specified in Section 23 09 23 "Direct Digital Control (DDC) System for HVAC" and Controls Diagrams

C. Electrical Connection: Factory-wired motors and controls for a single field connection.

2.9 CAPACITIES AND CHARACTERISTICS

A. Capacities and Characteristics: As scheduled on Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive cabinet unit heaters for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for piping and electrical connections to verify actual locations before unit-heater installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Suspend cabinet unit heaters from structure with elastomeric hangers. Vibration isolators are specified in Section 23 05 48.13 "Vibration Controls for HVAC."

B. Install new filters in each fan-coil unit within two weeks of Substantial Completion.

3.3 CONNECTIONS

A. Piping installation requirements are specified in Section 23 21 13 "Hydronic Piping" and Section 23 21 16 "Hydronic Piping Specialties." Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to machine to allow service and maintenance.

C. Connect supply and return ducts to cabinet unit heaters with flexible duct connectors specified in Section 23 33 00 "Air Duct Accessories."

D. Comply with safety requirements in UL 1995.

3.4 FIELD QUALITY CONTROL

A. Perform the following tests and inspections with the assistance of a factory-authorized service representative:

1. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
2. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

B. Units will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

END OF SECTION 23 82 39.13

SECTION 26 00 10 - GENERAL REQUIREMENTS FOR ELECTRICAL

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 the Work of this Division. "This Division" in this Section shall mean Divisions 26, 27, and 28 unless specifically indicated otherwise.

1. The intent of this Section is to complement Division 01 Specifications and to provide supplementary, trade-specific information.
2. Refer conflicting requirements to Architect for a decision before proceeding. If a resolution is not obtained, assume the costliest to apply.

B. Thoroughly study all Architectural, HVAC, Plumbing, Electrical, Fire Suppression, Structural, and Site Drawings and Specifications before submitting bids.

C. Drawings and Specifications are to be considered as supplementing each other. Work specified but not shown or shown but not specified shall be performed or furnished as though mentioned in both Specifications and Drawings.

D. Details on Drawings are to be considered typical for similar applications unless specifically noted otherwise.

1.2 SUMMARY

A. Bid shall include the cost of all labor, materials, tools, transportation, equipment, insurance, temporary protection, rentals, permits, taxes, and all necessary and miscellaneous items required to provide various systems shown and described complete and in good operating condition whether or not these miscellaneous items are specifically described in the Specifications or shown on the Drawings.

B. Install all work in accordance with all applicable codes and prepare supplemental detail drawings and Shop Drawings reflecting purchased equipment requirements as necessary to obtain approval of authorities having jurisdiction over this Project.

C. Guarantee workmanship, materials, and performance of this Division's systems [in accordance with the requirements of the Contract Documents**.**

D. The following are specifically included without limiting the generality implied by the Drawings or Specifications:

1. Electrical systems (Division 26) including:

a. Low-Voltage Electrical Power conductors and Cables
b. Grounding and Bonding for Electrical Systems
c. Hangers and Supports for Electrical Systems
d. Conduits for Electrical Systems
e. Boxes and Covers for Electrical Systems
f. Sleeves and Sleeve Seals for Electrical Raceways and Cabling
g. Identification for Electrical Systems
h. Lighting Control Devices
i. Wiring Devices
j. Lighting

2. Communications systems (Division 27) including:

   a. Pathways for Communications Systems

3. Electronic safety and security systems (Division 28) including:

   a. Fire Detection and Alarm

4. Coordinate All electric work associated with owner / facility low voltage access control installation team.
5. Earth moving for electrical, communications, and electronic safety and security, including trenching and backfilling and concrete and reinforcing work for electric services, fiberoptic service, telephone service, transformer pad, pole bases, and miscellaneous items. Concrete work is specified in Division 03.
6. Apply firestopping to penetrations of fire-rated construction, to restore original fire-resistance rating of assembly, and as indicated in this Division's Specifications. Comply with requirements in Division 07 Section "Penetration Firestopping."
7. Submittal of forms and Drawings to review and permit agencies.
8. Submittals.
9. Record Documents.
10. Permits and Inspections: Apply for and obtain all required permits and inspections in accordance with Division 01; pay all related fees and charges.

1.3 ALLOWANCES

A. Refer to Division 01 Specifications.

1.4 UNIT PRICES

A. Refer to Division 01 Specifications.

1.5 PROJECT MANAGEMENT AND COORDINATION

A. General Requirements:

1. Drawings show general design arrangement; install work substantially as indicated. Verify exact location and elevations on job. DO NOT SCALE DRAWINGS.
2. Due to small scale of Drawings, it is not possible to indicate all offsets, fittings, changes in elevation, interferences, etc. Adjust installation of piping, ductwork, conduit, equipment locations, etc., to accommodate work with obstacles and interferences encountered.
3. Advise the Owner's Representative in timely manner of questions on equipment locations, heights, etc.
4. Any reasonable location adjustment of equipment and associated services requested by the Architect/Owner's Representative, prior to work being installed, shall be done with no cost added to the Contract.

B. Coordination with Other Divisions:

1. Provide to other Divisions any information related to their appropriate trade concerning the equipment or any work of this Contract in ample time to prevent delay in building progress.
2. Interference:

   a. Thoroughly coordinate work with other Divisions and:

      1) Determine exact route or location of each piece of equipment, associated services, etc., before fabrication and installation.
      2) Maintain maximum headroom.
      3) Obtain Engineer's review before installing any work below 7'-0" clear headroom in mechanical areas.
      4) Install work of this Division so that all equipment is serviceable and operable.

   b. Should Architect's details, field conditions, changes in equipment, or Shop Drawing information necessitate an important rearrangement, advise Architect and act in accordance with his directions.

C. Coordination with Drawings: Review all Drawings and if necessary, request copies of Shop Drawings to coordinate work. If potential conflict occurs between this Division's Drawings and another Drawing, advise Owner's Representative and Architect in writing. Do not proceed with work without written directive from Contract-designated authority.

D. Coordination Drawings:

1. Before construction work commences, subcontractors for all trades shall submit coordination drawings in the form of reproducible transparencies drawn at not less than 1/4 inch = 1 foot in scale, noting Contract work below floor slab and penetrating floor slab]. Such drawings will be required throughout all areas for all trades. These drawings shall show resolutions of trade conflicts in congested areas. All conduit routing for wiring etc., shall be dimensioned from column centerlines.
2. Coordination drawings are intended for the respective Contractor's use during construction and shall not be construed as replacing any Shop Drawings or Record Drawings required elsewhere in these Contract Documents. Generally, drawing details

and sections are required only at places of conflict among trades. The drawings may be done on an area basis so as not to delay the overall project.

3. Submit coordinated drawings for review as Shop Drawings. The Owner's Representative's review of coordination drawings shall not relieve this Division from the responsibility for coordinating their work with the work of other trades nor shall it authorize any extra cost, omission, or deviation from the requirements of the Contract Documents. Any costs arising from errors or omissions in the coordination process shall be borne by this Division.

E. Scheduling and Procedure of Work:

1. The work of this Division shall be completed in accordance with Project schedule; otherwise, the Owner's Representative shall have the right to install, at this Division's expense, any temporary work of this Division necessary to meet the scheduled completion date.
2. As work occurs within or attached to existing structures:

    a. Perform all work only on approved schedule.
    b. Do not interfere with normal operation of existing systems.
    c. Do not shut off any services without written authorization of Owner's Representative.
    d. Do as much work as possible prior to the shutdown to minimize the downtime.
    e. Make temporary connections as necessary to maintain schedule agreed upon, with no cost added to the Contract.

3. Proper work attire shall be worn at all times.
4. Refer to Division 01 Specifications for additional requirements, such as parking permits and identification badges.

1.6 SUBMITTALS

A. Supply submittals indicated in each Section of this Division's Specifications and in accordance with requirements of Division 01 Specifications. Supply separate submittals for each Section of Specifications.

B. Wiring Diagrams: Electrically operated equipment shall include factory-approved wiring diagram illustrating proper connections to be made between equipment and power and equipment and auxiliary controls (where applicable).

C. Clearly label each submittal with item name/description; Specifications' section, paragraph and/or subparagraph; and any pertinent Drawing detail reference information.

D. Submit field quality-control reports when indicated in Part 3 of Division's Specifications.

1.7 QUALITY REQUIREMENTS

A. Contractor shall be licensed in accordance with New York State General Business Law, Article 6-D.

B. Observation of the Work:

1. Architect/Engineer may make periodic visits to the job site to observe the general progress and quality of the work. Architect/Engineer will not make continuous or detailed on-site inspections to check the quality and/or quantity of work and will not be responsible for this Division's failure to carry out construction work in accordance with the Contract Documents, Project schedule, or unsound construction procedures or practices.

C. Conflict Requirements:

1. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

D. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Before request for final payment, submit to the owner and the Architect a certificate of approval from electrical inspection agency.

E. “Testing, adjusting, and balancing (TAB) shall be performed by an independent, certified TAB agency not affiliated with installing contractors.”

1.8 REFERENCES

A. Industry Standards:

1. The following standards shall govern and shall constitute minimum requirements as approved. If the requirements of this Division's Specifications exceed those of the standards mentioned, this Division's Specifications shall govern.

a. Local and state building codes.
b. Local utility companies.
c. National Electrical Manufacturer's Association ("NEMA").
d. American Institute of Electronic and Electrical Engineers ("IEEE")
e. National Electrical Safety Code ("NESC").
f. National Electric Code ("NEC").
g. ETL, Factory Mutual ("FM"), or Underwriters Laboratories, Inc. ("UL"), approved or listed, wherever applicable to materials.
h. American National Standards Institute ("ANSI").
i. National Fire Protection Association ("NFPA")
j. Official Compilation of Codes, Rules and Regulations of the State of New York (“NYCRR”) for education, health, and sanitary rules and regulations, including:

1) Chapter XXXIII – State Fire Prevention and Building Code Council, including:

a) Subchapter A – Uniform Fire Prevention and Building Code (Uniform Code):
(1) Uniform Fire Prevention and Building Code (Part 1219).
(2) Building Construction (Part 1221).
(3) Plumbing Systems (Part 1222).
(4) Mechanical Systems (Part 1223).
(5) Fuel Gas Equipment and Systems (Part 1224).
(6) Fire Prevention (Part 1225).
(7) Property Maintenance (Part 1226).
(8) Existing Buildings (Part 1227).
(9) The following documents by reference: 2025 Residential Code of New York State, 2025 Plumbing Code of New York State, 2025 Mechanical Code of New York State, 2025 Building Code of New York State, 2025 Fire Code of New York State, 2025 Existing Building Code of New York State, 2025 Fuel Gas Code of New York State, and 2025 Property Maintenance Code of New York State.

b) Subchapter B – State Energy Conservation Construction Code (Energy Code):
(1) State Energy Conservation Construction Code (Part 1240).
(2) The amended and updated edition of the Energy Code incorpor
(3) ted, by reference, the following publications:
(1.) 2025 Energy Conservation Construction Code of New York State (publication date: July 2025.
(2.) NYS ASHRAE 90.1-2025 – NYS version of the Energy Standard for Buildings Except Low-Rise Residential Buildings ("NYS ASHRAE 90.1-2025 ")

k. Federal Register Americans Disabilities Act ("ADA"); and ICC/ANSI A117.1, the Handicapped Accessibility Code.

B. Materials and Equipment:

1. Electrical devices, materials, and packaged equipment shall be listed and labeled by UL, FM, or ETL for the intended use and shall bear their label.
2. Plastic materials or equipment with plastic components cannot be installed or used in or as part of a building unless:

a. Such covered product complies with the requirements of Chapter 26 of the Building Code of New York State.
b. A report of such compliance has been filed with the Department of State in accordance with the Building Code of New York State.

C. Before submitting bid, consult above codes, regulations, and requirements and make all necessary provisions for same in bid.

1.9 TEMPORARY FACILITIES AND CONTROLS

A. Refer to Division 01 Specifications.

B. Fire Alarm System During Construction:

1. Maintain in operation the present building system. Prior to start of any construction, verify system status with Owner and document deficiencies.
2. Upon completion of Project, present fire alarm system shall be in the same status as prior to construction.

1.10 PRODUCT REQUIREMENTS

A. Refer to Division 01 Specifications.

B. The term "product" shall mean items obtained for incorporating into the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes terms "materials," "equipment," "systems," and terms of similar intent.

C. The Contract is based on products specified herein, shown on Drawings, and as authorized by addendum.

D. Ensure all products conform to the Drawings and Specifications with regard to space requirements, performance, capacity, configuration, accessories, and materials of construction.

E. Products furnished shall be new and, where used for similar purposes, of the same manufacturer. To the fullest extent possible, provide like products from a single source. If quantities from a single source cannot be provided, Architect/Engineer will make determination.

F. Where the term "provide" is indicated, it shall have the same meaning as "furnish and install." All products listed shall be furnished and installed unless specifically noted to the contrary.

G. Where the term "basis-of-design product," including manufacturer and model number or other designation, is indicated, intent is to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the Specifications. Bear responsibility and cost for changes made necessary by the use of products other than those of the basis-of-design product.

H. Where "Manufacturer" or "Product" is indicated with only one named manufacturer or one named product, provide the product of the named manufacturer or the listed product. Comparable products or substitutions are not permitted.

I. Justification for acceptance or rejection of unnamed products, unnamed manufacturers, comparable products, or product substitutions will not be demonstrated by the Architect/Engineer.

J. Delivery, Storage, and Handling:

1. Deliver, store, and handle materials as recommended by the manufacturer.
2. Handle and store materials in a manner which will not damage materials.
3. Deliver and store materials throughout floor areas and in locations designated by Owner's Representative. Provide blocking or pallets to prevent materials from becoming soiled.
4. Schedule deliveries with Owner's Representative prior to shipping.
5. Be available at site to receive deliveries as scheduled.
6. Hoist all materials as necessary to complete this Division's scope of work.

K. Warranties:

1. Refer to Sections of this Division's Specifications for specific warranties.
2. Refer to Division 01 Specifications for submittal of warranties.

1.11 EXECUTION

A. Examination of Premises and Existing Conditions:

1. Examine all existing conditions affecting compliance with Drawings and Specifications by visiting site.
2. Ascertain access to site, available storage, and delivery facilities.
3. Verify all governing dimensions at site.
4. Inspect all adjacent work.
5. Verify the location, sizes, and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services; HVAC utility piping and other utilities.
6. No consideration shall be given for alleged misunderstandings. Proceeding with the work indicates acceptance of existing conditions.

B. Roughing:

1. This Division's equipment shall be located generally as shown on Drawings; however, check actual field conditions to determine exact locations and avoid interference with other trades. Deviations from the Drawings proposed by this Division must be reviewed by the Owner's Representative before the changes are made. Work improperly installed due to lack of construction verification shall be corrected at the expense of this Division.
2. Before roughing for equipment furnished by others, obtain approved roughing drawings and exact location for each piece of equipment.
3. Obtain Drawings or proper information giving final locations of all wiring, piping, ductwork, and motor and control connections.
4. Unless otherwise detailed or specified:

    a. All services shall be concealed in wall, above ceilings, etc.
    b. Work shall be exposed only where approved by the Architect.
    c. Notify Owner's Representative and Architect if work cannot be concealed as intended.

C. Cutting and Patching:

1. General Contractor shall provide removals, cutting, patching, and replacement required for installation of the work in this Contract. All penetrations of rated assemblies shall comply with Penetration Firestopping.

    a. General Contractor shall provide patching for all existing openings caused by the removal of existing ducts, fixtures, equipment, piping, conduit, supports, etc.

D. Progress Cleaning: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1.12 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

A. Salvage of Existing Materials: Obtain from Owner's Representative a list of existing items being removed, to be delivered to on-site storage as directed. Remove from site and legally dispose of items not specifically noted on said list.

1. Dispose of existing lamps associated with luminaires to be removed in accordance with New York State and Federal guidelines and regulations for disposal of mercury-containing lamps.
2. Dispose of existing ballasts associated with luminaires to be removed in accordance with New York State and Federal guidelines and regulations for disposal of fluorescent ballasts. All fluorescent ballasts shall be treated as hazardous waste unless the ballast clearly indicates that it contains no PCB.

1.13 CLOSEOUT PROCEDURES

A. After all tests are made and installations pronounced satisfactory:

1. Thoroughly clean entire installation (both exposed surfaces and interiors) and leave in clean condition.
2. Remove all debris caused by work.
3. Promptly remove tools, surplus materials, and trailer when work is finally accepted.

B. Receipts for Loose Equipment:

1. Prior to request for final payment:

    a. Deliver to Owner's Representative the following loose equipment:

        1) Keys for panelboards.
        2) Circuit-breaker handle locks.
        3) Spare fuses for main switchboard and disconnect switches.
        4) Spare glass rods for fire alarm system manual stations.

    b. Obtain signed receipt for delivered loose equipment.

2. Include receipt in operations and maintenance manual.

C. Refer to Division 01 Specifications for additional information on Project closeout and cleanup.

1.14 OPERATION AND MAINTENANCE DATA

A. Submit 3 complete copies of operating and maintenance manuals for each building to the Owner's Representative 60 days prior to scheduled date of substantial completion. Noncompliance or incomplete submittal will be rejected and returned for resubmittal.

1. Photocopy paragraphs B and C below to be used a checklist for compliance with materials, format, and data.
2. Once items are compiled, place a checkmark in the brackets for items included and strike through the items that do not apply.
3. Submit checklist with operating and maintenance manuals.

B. The operating and maintenance manuals shall consist of and will be reviewed for the following format and contents. Submit O&M manuals in both hard copy and electronic PDF format. If Owner Representative/Construction Manager has an electronic O&M platform, upload to that system."

1. Binder:

a. **[ ]**Three-ring, plain black, vinyl binder free of vendor/contractor logos, etc.
b. **[ ]**Cover and spine (binder) identification including:

1) **[ ]**Manual title: "OPERATION AND MAINTENANCE MANUAL."
2) **[ ]**Owner.
3) **[ ]**Project title.
4) **[ ]**Owner's project number.
5) **[ ]**Year of construction.
6) **[ ]**Trade(s).
7) **[ ]**Volume number and total number of volumes (e.g., Volume 1 of 2).

2. Contents:

a. **[ ]**Project title page (enclosed in clear, transparent plastic sleeve) to match cover identification with at least one-third page blank for review stamp and comments.
b. **[ ]**Project directory page (enclosed in a clear transparent plastic sleeve) including name, address, and telephone number of:

1) **[ ]**Owner.
2) **[ ]**Architect.
3) **[ ]**Engineer.
4) **[ ]**Contractor.
5) **[ ]**Subcontractor.

c. **[ ]**Table of contents (enclosed in a clear, transparent plastic sleeve) arranged to follow Specifications order (with format as list below):

1) **[ ]**Warranty letter.

2) **[ ]**Summary of scheduled maintenance.
3) **[ ]**List of maintenance parts, repair/replacement parts, and recommended spare parts, including equipment name, part number, and suppliers (name, address, and phone number).
4) **[ ]**Letters of certification for required system tests.
5) **[ ]**Include on table of contents the following information for each product:

Spec. Section Number	Equipment Description	Supplying Company	Local Representative	Telephone Number
260500	Widgets	Acme Company	John Doe	555-1212

d. **[ ]**Submittals as indicated in "Submittals" Article of this Section, including:

1) **[ ]**Approved copies of all submittals, including parts lists.
2) **[ ]**Material safety data sheets for:

a) **[ ]**Firestopping.

3) **[ ]**Installation, operating, and maintenance instructions.
4) **[ ]**Wiring diagrams.
5) **[ ]**Warranties.
6) **[ ]**Test reports.

C. **[ ]**Product Identification:

1. **[ ]**Provide indexed cardstock dividers between each submittal group.
2. **[ ]**Arrange in an order corresponding to the original Project's Specifications.
3. **[ ]**Where cataloged data covers more than one item, highlight applicable sections and identify corresponding equipment as marked on Drawings.
4. **[ ]**Instructions shall include:

a. Time schedule for maintenance work (list each item of mechanical equipment requiring inspection, lubrication, or service) and description of the performance of such maintenance.
b. Normal starting, operating, and shutdown procedures.

1.15 PROJECT RECORD DOCUMENTS

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Owner's Representative's, Architect's, and/or Engineer's reference during normal working hours.

C. Record Drawings:

1. Submit Contract Drawings and Shop Drawings in both hard copy and electronic PDF format. If Owner Representative/Construction Manager has an electronic platform, upload to that system, incorporating new and revised drawings as modifications are issued.
2. Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

    a. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

        1) Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
        2) Accurately record information in an acceptable drawing technique.
        3) Record data as soon as possible after obtaining it.
        4) Record and check the markup before enclosing concealed installations.
        5) Cross-reference record prints to corresponding archive photographic documentation.

    b. Content: Types of items requiring marking include, but are not limited to, the following:

        1) Dimensional changes to Drawings.
        2) Revisions to details shown on Drawings.
        3) Locations and depths of underground utilities.
        4) Revisions to routing of piping and conduits.
        5) Revisions to electrical circuitry pertaining to the work of this Contract.
        6) Actual equipment locations.
        7) Locations of concealed internal utilities.
        8) Changes made by Change Order or Construction Change Directive.
        9) Changes made following Architect's written orders.
        10) Details not on the original Contract Drawings.
        11) Field records for variable and concealed conditions.
        12) Record information on the Work that is shown only schematically.

    c. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
    d. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
    e. Mark important additional information that was either shown schematically or omitted from original Drawings.
    f. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

3. Submittals: Comply with Division 01 Specifications and the following:

   a. Submit Record Drawings as follows:

      1) Initial Submittal:

         a) "Submit Record Drawings and Specifications in searchable PDF format. If Owner requires, provide upload to approved electronic project platform. Engineer will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

      2) Final Submittal:

         a) At the end of Project and after incorporating Engineer's review comments, "Submit Record Drawings and Specifications in searchable PDF format. If Owner requires, provide upload to approved electronic project platform."

   b. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

      1) Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include the following identification on cover sheets.
      2) PDFs: Organize into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification (i.e., Drawing Number).
      3) Identification: As follows:

         a) Project name.
         b) Date.
         c) Designation "PROJECT RECORD DRAWINGS."
         d) Name of Architect.
         e) Name of Contractor.

D. Record Specifications: Comply with Division 01 Specifications and the following:

   1. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

      a. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
      b. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
      c. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
      d. Note related Change Orders, record Product Data, and record Drawings where applicable.

2. Submittal: Submit Record Drawings and Specifications in searchable PDF format. If Owner requires, provide upload to approved electronic project platform. Identification shall be as stated hereinbefore for Record Drawings.

E. Refer to Division 01 Specifications.

1.16 DEMONSTRATION AND TRAINING

A. Owner's designated operating personnel shall be instructed in the care and operation of the systems in accordance with manufacturer's instructions and as indicated in these Specifications.

B. Coordinate instruction schedule with Owner's operations. Notify Owner's personnel in advance of training. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

1.17 WORK RELATED TO ASBESTOS AND WORK IN ASBESTOS-CONTAMINATED AREAS

A. Portions of the existing general construction are believed to be constructed with asbestos-containing materials.

B. Do not disturb such materials.

C. Where work is unavoidable in contaminated areas, employ or subcontract the services to perform the work of this Division.

D. It is understood that a separate contract has been, or will be, issued for the abatement of portions of the asbestos-containing materials.

PART 2 - PRODUCTS

2.1 TEMPORARY LIGHT AND POWER FOR CONSTRUCTION

A. Light Fixtures:

1. Low-bay, industrial-type LED source with lamp guard.
2. Rated 90 watts, 12,400 lumens, 4000 K, 120/277 volts.
3. Available Product: Baron/Trace-Lite “EHB” series or equal.

B. Wire and receptacles: As specified in Division 26 Section "Wiring Devices."

C. Outlet Boxes:

1. Utility type, weatherproof.
2. Available Manufacturer: Red Dot with weatherproof.

D. Panelboards:

1. Load-center type, rain tight.
2. Rating: 208Y/120 volts, 3-phase, 4-wire, ampere as required.
3. Breakers: As required, GFI throughout.
4. Manufacturers:

    a. General Electric.
    b. Eaton.
    c. Square D.

E. Disconnect Switches:

1. Rain tight, general duty, 250-V ac, 3-pole, fusible, size as required.
2. Manufacturers:

    a. General Electric.
    b. Eaton.
    c. Square D.

F. Wireway:

1. Rain tight, size as required.
2. Manufacturers:

    a. General Electric.
    b. Square D.
    c. Keystone.

G. Feeder Cables:

1. Four-conductor, aluminum, Type SER cable; provide additional aluminum, Type TW equipment ground-installed parallel with feeder cable.
2. Manufacturer: Contractor's option.

PART 3 - EXECUTION

3.1 TEMPORARY LIGHT AND POWER FOR CONSTRUCTION

A. Provide and maintain temporary light and power as specified and as required by the NEC and OSHA.

B. Relocate temporary work as may be required to avoid delaying work of other trades.

C. Install suitable temporary lighting to provide a minimum of 5 foot candles at all locations within the buildings.

D. Install a reasonable number of convenience receptacles to provide power for hand tools and other construction equipment. Locate so that any part of the buildings may be reached with a 100' extension cord.

E. Remove all temporary panels, switches, wiring, etc., upon completion of Project.

F. Special Services:

1. Each trade wishing to use special circuitry for its power tools, etc., shall make the necessary arrangements with this Division's Contractor and pay all costs.
2. Each trade shall provide its own extension cords.

END OF SECTION 26 00 10

SECTION 26 05 19 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Thermoplastic-insulated wire.
2. Thermoset-insulated wire.
3. Nonmetallic underground conduit with conductors.
4. Metallic sheathed cable.
5. Photovoltaic single-conductor cable.
6. Nonmetallic jacketed cable.
7. Connectors and splices.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" specifies additional requirements applicable to coordinating, scheduling, and sequencing of the Work specified in this Section.
2. Section 078413 "Penetration Firestopping" specifies materials and methods for sealing penetrations of rated walls and partitions referenced by this Section.
3. Section 260526 "Grounding and Bonding for Electrical Systems" specifies grounding and bonding referenced by this Section.
4. Section 260529 "Hangers and Supports for Electrical Systems" specifies hangers, supports, and concrete bases referenced by this Section.
5. Section 260533.13 "Conduits for Electrical Systems" specifies installation of raceways referenced by this Section.
6. Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling" specifies installation of sleeves and sleeve seals referenced by this Section.
7. Section 260553 "Identification for Electrical Systems" specifies electrical equipment labels and warning signs referenced by this Section.

1.2 ACTION SUBMITTALS

A. Product Schedule: Indicate type, use, location, and termination locations.

B. Product Data: For each type of product.

C. Sustainable Design Submittals:

1. Product Data: For solvents and adhesives, indicating VOC content.

D. Field quality-control reports.

1.3 INFORMATIONAL SUBMITTALS

A. Manufacturer's published instructions.

B. Field Reports:

1. Field reports for infrared scanning.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Products or components listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2.2 THERMOPLASTIC-INSULATED WIRE

A. Description: Thermoplastic-insulated wire for use in accordance with Article 310 of NFPA 70.

B. UL ZLGR - Type THHN Insulated Wire:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Alpha Wire; brand of Belden, Inc.
b. Belden Inc.
c. Cerro Wire LLC
d. Encore Wire Corporatio
e. Okonite Company (The)
f. Prysmian Cables and Systems; Prysmian Group North America
g. Southwire Company, LLC

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Thermoplastic-Insulated Wire: UL CCN ZLGR, including UL 83.

3. Standard Features:

a. Referenced Standard: Article 310 of NFPA 70.
b. Insulation Voltage Rating: 600 V.
c. Insulation Temperature Rating: 90 deg C.
d. Conductor Material: Copper.
e. Conductor Size: As indicated on the Drawings.

1) Minimum Conductor Size: 12 AWG.

C. UL ZLGR - Type THHW Insulated Wire:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Alpha Wire; brand of Belden, Inc.
b. Encore Wire Corporation
c. Prysmian Cables and Systems; Prysmian Group North America
d. Southwire Company, LLC

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Thermoplastic-Insulated Wire: UL CCN ZLGR, including UL 83.

3. Standard Features:

a. Referenced Standard: Article 310 of NFPA 70.
b. Insulation Voltage Rating: 600 V.
c. Insulation Temperature Rating: 75 deg C.
d. Conductor Material: Copper.
e. Conductor Size: As indicated on the Drawings.

1) Minimum Conductor Size: 12 AWG.

4. Other Available Features Required by the Project:

a. Marked "Cable Tray Use" or "CT," indicating compliance with vertical-tray cable flame test.
b. Marked "Sunlight Resistant" or "SR," indicating compliance with artificial weathering test.
c. Marked "Oil Resistant I" or "PR I," indicating 60 deg C oil resistance.
d. Marked "Oil Resistant II" or "PR II," indicating 75 deg C oil resistance.
e. Marked "Gasoline and Oil Resistant I" or "GR I," indicating suitable for exposure to gasoline at 23 deg C and exposure to mineral oil at 60 deg C.
f. Marked "Gasoline and Oil Resistant II" or "GR II," indicating suitable for exposure to gasoline at 23 deg C and exposure to mineral oil at 75 deg C.
g. Marked "VW-1," indicating compliance with special vertical flame test.
h. Marked "ST1," indicating compliance with UL 1685 flame and smoke test.

D. UL ZLGR - Type THW Insulated Wire:

1. Manufacturers: Subject to compliance with requirements, [provide products by one of the following:

a. Alpha Wire; brand of Belden, Inc.
b. Belden Inc.

c. Cerro Wire LLC
d. Encore Wire Corporation
e. Okonite Company (The)
f. Prysmian Cables and Systems; Prysmian Group North America
g. Service Wire Co.
h. Southwire Company, LLC

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Thermoplastic-Insulated Wire: UL CCN ZLGR, including UL 83.

3. Standard Features:

a. Referenced Standard: Article 310 of NFPA 70.
b. Insulation Voltage Rating: 600 V.
c. Insulation Temperature Rating: 75 deg C.
d. Conductor Material: Copper.
e. Conductor Size: As indicated on the Drawings.

1) Minimum Conductor Size: 12 AWG.

4. Other Available Features Required by the Project:

a. Marked "Cable Tray Use" or "CT," indicating compliance with vertical-tray cable flame test.
b. Marked "Sunlight Resistant" or "SR," indicating compliance with artificial weathering test.
c. Marked "Oil Resistant I" or "PR I," indicating 60 deg C oil resistance.
d. Marked "Oil Resistant II" or "PR II," indicating 75 deg C oil resistance.
e. Marked "Gasoline and Oil Resistant I" or "GR I," indicating suitable for exposure to gasoline at 23 deg C and exposure to mineral oil at 60 deg C.
f. Marked "Gasoline and Oil Resistant II" or "GR II," indicating suitable for exposure to gasoline at 23 deg C and exposure to mineral oil at 75 deg C.
g. Marked "VW-1," indicating compliance with special vertical flame test.
h. Marked "ST1," indicating compliance with UL 1685 flame and smoke test.

E. UL ZLGR - Type THW-2 Insulated Wire:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Alpha Wire; brand of Belden, Inc.
b. Belden Inc.
c. Cerro Wire LLC
d. Encore Wire Corporation
e. Okonite Company (The)
f. Prysmian Cables and Systems; Prysmian Group North America

g. Service Wire Co.
h. Southwire Company, LLC

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Thermoplastic-Insulated Wire: UL CCN ZLGR, including UL 83.

3. Standard Features:

a. Referenced Standard: Article 310 of NFPA 70.
b. Insulation Voltage Rating: 600 V.
c. Insulation Temperature Rating: 90 deg C.
d. Conductor Material: Copper.
e. Conductor Size: As indicated on the Drawings.

1) Minimum Conductor Size: 12 AWG.

4. Other Available Features Required by the Project:

a. Marked "Sunlight Resistant" or "SR," indicating compliance with artificial weathering test.
b. Marked "Oil Resistant I" or "PR I," indicating 60 deg C oil resistance.
c. Marked "Oil Resistant II" or "PR II," indicating 75 deg C oil resistance.
d. Marked "Gasoline and Oil Resistant I" or "GR I," indicating suitable for exposure to gasoline at 23 deg C and exposure to mineral oil at 60 deg C.
e. Marked "Gasoline and Oil Resistant II" or "GR II," indicating suitable for exposure to gasoline at 23 deg C and exposure to mineral oil at 75 deg C.
f. Marked "VW-1," indicating compliance with special vertical flame test.
g. Marked "ST1," indicating compliance with UL 1685 flame and smoke test.

F. UL ZLGR - Type THWN-2 Insulated Wire:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Alpha Wire; brand of Belden, Inc.
b. Belden Inc.
c. Cerro Wire LLC
d. Encore Wire Corporatio
e. Okonite Company (The)
f. Prysmian Cables and Systems; Prysmian Group North America
g. Southwire Company, LLC

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Thermoplastic-Insulated Wire: UL CCN ZLGR, including UL 83.

3. Standard Features:

a. Referenced Standard: Article 310 of NFPA 70.
b. Insulation Voltage Rating: 600 V.
c. Insulation Temperature Rating: 90 deg C.
d. Conductor Material: Copper.
e. Conductor Size: As indicated on the Drawings.

1) Minimum Conductor Size: 12 AWG.

4. Other Available Features Required by the Project:

a. Marked "Cable Tray Use" or "CT," indicating compliance with vertical-tray cable flame test.
b. Marked "Sunlight Resistant" or "SR," indicating compliance with artificial weathering test.
c. Marked "Oil Resistant I" or "PR I," indicating 60 deg C oil resistance.
d. Marked "Oil Resistant II" or "PR II," indicating 75 deg C oil resistance.
e. Marked "Gasoline and Oil Resistant I" or "GR I," indicating suitable for exposure to gasoline at 23 deg C and exposure to mineral oil at 60 deg C.
f. Marked "Gasoline and Oil Resistant II" or "GR II," indicating suitable for exposure to gasoline at 23 deg C and exposure to mineral oil at 75 deg C.
g. Marked "VW-1," indicating compliance with special vertical flame test.
h. Marked "ST1," indicating compliance with UL 1685 flame and smoke test.

2.3 NONMETALLIC UNDERGROUND CONDUIT WITH CONDUCTORS

A. Nonmetallic Underground Conduit with Conductors, Type NUCC:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Blue Diamond Industries, LLC
b. Paige Electric Co, LP
c. Prysmian Cables and Systems; Prysmian Group North America
d. Southwire Company, LLC

2. Description: A factory assembly of conductors or cables inside a nonmetallic, smooth-wall raceway with a circular cross section.
3. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Type NUCC Conduit with Conductors: UL CCN QQRK, including UL 1990.

4. Standard Features:

a. Referenced Standard: Article 354 of NFPA 70.
b. Conduit Material: HDPE-40.
c. Conduit Sizes: As indicated on the Drawings.
d. Preinstalled Conductors: Provide insulated conductors as indicated on the Drawings.

2.4 CONNECTORS AND SPLICES

A. UL ZMVV - Wire Connectors and Soldering Lugs:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB, Installation Products
b. Amphenol TPC Wire & Cable
c. Burndy; brand of Hubbell Electrical Solutions; Hubbell Incorporated
d. Eaton
e. Fastenal Co.
f. Gardner Bender; brand of ECM Industries LLC; division of nVent Electric plc
g. Hillsdale Terminal
h. Ideal Industries, Inc.
i. Newark; an Avnet Company
j. Panduit Corp]
k. TE Connectivity Ltd.

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Wire Connectors and Soldering Lugs: UL CCN ZMVV, including UL 486A-486B or UL 486C.

3. Standard Features:

a. One piece, seamless, designed to terminate conductors specified in this Section.
b. Material: Copper.
c. Type: Two hole with standard barrels.
d. Termination: Compression.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders:

1. Copper; solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
2. Copper for feeders smaller than No. 4 AWG; copper, aluminum, or copper-clad

aluminum for feeders No. 4 AWG and larger. Conductors must be solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

B. Branch Circuits:

1. Material: Copper.

a. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
b. Solid for No. 12 AWG and smaller; stranded for No. 10 AWG and larger.

C. ASD Output Circuits Cable: Extra-flexible stranded for all sizes.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN/THWN-2, single conductors in raceway.

B. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type XHHW-2, single conductors in raceway.

C. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN/THWN-2, single conductors in raceway.

D. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type XHHW-2, single conductors in raceway.

3.3 INSTALLATION OF LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

A. Comply with manufacturer's published instructions.

B. Reference Standards for Installation: Unless more stringent installation requirements are specified in the Contract Documents or manufacturer's published instructions, comply with the following:

1. Electrical Construction: ICC IBC, ICC IFC, NFPA 1, NFPA 70, and NECA NEIS 1.
2. Electrical Maintenance: NFPA 70B.
3. Electrical Safety: NFPA 70E.
4. Temporary Electric Power Work: NECA NEIS 200.
5. Grounding and Bonding: NECA NEIS 331 and Article 250 of NFPA 70.
6. Work in Confined Spaces: NFPA 350.
7. Work in Basements and Other Developed Subterranean Spaces: NFPA 520.
8. Installation of Type AC and Type MC Cables: NECA NEIS 120.
9. Consult Architect for resolution of conflicting requirements.

C. Special Installation Techniques:

1. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.
2. Complete raceway installation between conductor and cable termination points prior to pulling conductors and cables.
3. 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.
4. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
5. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
6. Provide support for cables.
7. Complete cable tray systems installation prior to installing conductors and cables.
8. Connections:

    a. Tighten electrical connectors and terminals in accordance with manufacturers' published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
    b. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

        1) Use oxide inhibitor in each splice, termination, and tap for aluminum conductors.

9. Wiring at Outlets: Install conductor at each outlet, with at least 6 inch of slack.

D. Interfaces with Other Work:

1. Identification:

    a. Identify and color-code conductors and cables.
    b. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

2. Sleeves and Sleeve Seals: Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies.
3. Firestopping: Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly.

3.4 FIELD QUALITY CONTROL

A. Administrant for Electrical Power Tests and Inspections:

1. Contractor will engage qualified electrical testing and inspecting agency to administer and perform tests and inspections.
2. Engage qualified electrical testing and inspecting agency to administer and perform tests and inspections.
3. Engage factory-authorized service representative to administer and perform tests and

inspections on components, assemblies, and equipment installations, including connections.

4. Administer and perform tests and inspections.

B. Field tests and inspections must be witnessed by authorities having jurisdiction.

C. Tests and Inspections:

1. Perform manufacturer's recommended tests and inspections.
2. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors for compliance with requirements.
3. After installing conductors and cables and before electrical circuitry has been energized, test conductors feeding the following critical equipment and services for compliance with requirements:

    a. Low Voltage power supply enclosures.
    b. Door operators.
    c. Access control door power supplies.

4. Perform each of the following visual and electrical tests:

    a. Inspect exposed sections of conductor and cable for physical damage and correct connection in accordance with the single-line diagram.
    b. Test bolted connections for high resistance using one or more of the following:

        1) A low-resistance ohmmeter.
        2) Calibrated torque wrench.
        3) Thermographic survey.

    c. Inspect compression-applied connectors for correct cable match and indentation.
    d. Inspect for correct identification.
    e. Inspect cable jacket and condition.
    f. Insulation-resistance test on each conductor for ground and adjacent conductors. Apply a potential of 500 V(dc) for 300 V rated cable and 1000 V(dc) for 600 V rated cable for a one-minute duration.
    g. Continuity test on each conductor and cable.
    h. Uniform resistance of parallel conductors.

D. Nonconforming Work:

1. Wire or cable assembly will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective units and retest.

E. Field Quality-Control Reports: Collect, assemble, and submit test and inspection reports.

3.5 MAINTENANCE

A. Infrared Scanning of Splices: Two months after Substantial Completion, perform infrared scan

of splices, joints, and connections in conductors 3 AWG and larger. Remove covers so splices, joints, and connections are accessible to portable scanner. Take visible light photographs at same locations and orientations as infrared scans for documentation to ensure follow-on scans match same conditions for valid comparison. Correct deficiencies determined during the scan.

1. Follow-On Infrared Scanning: Perform follow-up infrared scan of splices at 11 months after Substantial Completion.
2. Instrument: Use infrared-scanning device designed to measure temperature or to detect significant deviations from normal values. Provide documentation of device calibration.
3. Field Reports for Infrared Scanning: Prepare certified report that identifies cables splices checked and that describes scanning results. Include notation of deficiencies detected, remedial actions taken, and scanning observations after remedial action.

END OF SECTION 26 05 19

SECTION 26 05 26 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Grounding and bonding conductors.
2. Grounding and bonding clamps.
3. Grounding and bonding bushings.
4. Grounding and bonding hubs.
5. Grounding and bonding connectors.
6. Intersystem bonding bridge grounding connectors.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" specifies additional requirements applicable to coordinating, scheduling, and sequencing of the Work specified in this Section.
2. Section 260553 "Identification for Electrical Systems" specifies electrical equipment labels and warning signs installed by this Section.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Product Listing: Include copy of unexpired approval letter, on letterhead of qualified electrical testing agency, certifying product's compliance with specified listing criteria.

    a. If listed manufacturer differs from selling manufacturer, indicate relationship between entities on submittal. Clearly indicate which entity warrants product performance and fitness for purpose.
    b. Listing criteria identified in approval letter must match specified listing criteria. UL label indicating approval of equipment's enclosure is not considered approval of equipment for intended application.
    c. Product identification in approval letter must match product branding and model numbers in submittal. Approval letters for discontinued or superseded products are unacceptable for submitted product.

B. Shop Drawings: Prepare and submit the following:

1. Plans showing dimensioned locations of grounding features described in "Field Quality Control for Grounding and Bonding" Article, including the following:

    a. Grounding electrode access enclosures.

b. Grounding electrodes.
c. Grounding arrangements and connections for separately derived systems.

C. Field quality-control reports.

1.3 INFORMATIONAL SUBMITTALS

A. Manufacturer's published instructions.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Products or components listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2.2 GROUNDING AND BONDING CONDUCTORS

A. Equipment Grounding Conductor:

1. Standard Features: 600 V, THHN/THWN-2, copper wire or cable, green color, in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

B. ASTM - Bare Copper Grounding and Bonding Conductor:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ERICO; brand of nVent Electrical plc
b. Harger Lightning & Grounding; business of Harger, Inc.

2. Standard Features: Complying with one or more of the following:

a. Soft or Annealed Copper Wire: ASTM B3.
b. Concentric-Lay Stranded Copper Conductor: ASTM B8.
c. Tin-Coated Soft or Annealed Copper Wire: ASTM B33.
d. 19-Wire Combination Unilay-Stranded Copper Conductor: ASTM B787/B787M.

2.3 GROUNDING AND BONDING CLAMPS

A. Description: Clamps suitable for attachment of grounding and bonding conductors to grounding electrodes, pipes, tubing, and rebar. Grounding and bonding clamps specified in this article are also suitable for use with communications applications.

B. UL KDER and KDSH - Hex-Fitting-Type Pipe and Rod Grounding and Bonding Clamp:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. ABB Electrification Installations Products
   b. Arlington Industries, Inc.
   c. Cooper B-line; brand of Eaton, Electrical Sector
   d. Harger Lightning & Grounding; business of Harger, Inc.
   e. ILSCO; brand of ECM Industries LLC; division of nVent Electric plc
   f. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group
   g. Panduit Corp
   h. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated

2. Source Limitations: Obtain products from single manufacturer.
3. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

   a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.
   b. Grounding and Bonding Equipment for Communications: UL CCN KDSH; including UL 467.

4. Standard Features:

   a. Two pieces with zinc-plated stainless steel bolts.
   b. Clamp Material: Aluminum.
   c. Listed for outdoor use.

2.4 GROUNDING AND BONDING BUSHINGS

A. Description: Bonding bushings connect conduit fittings, tubing fittings, threaded metal conduit, and unthreaded metal conduit to metal boxes and equipment enclosures, and have one or more bonding screws intended to provide electrical continuity between bushing and enclosure. Grounding bushings have provision for connection of bonding or grounding conductor and may or may not also have bonding screws.

B. UL KDER - Bonding Bushing:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. ABB Electrification Installations Products
   b. Arlington Industries, Inc.
   c. Crouse-Hinds; brand of Eaton, Electrical Sector
   d. Killark; brand of Hubbell Electrical Solutions; Hubbell Incorporated
   e. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton

Group
f. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated

2. Source Limitations: Obtain products from single manufacturer.
3. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.

4. Standard Features: Threaded bushing with insulated throat.

C. UL KDER - Grounding Bushing:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. Arlington Industries, Inc.
c. Crouse-Hinds; brand of Eaton, Electrical Sector
d. Killark; brand of Hubbell Electrical Solutions; Hubbell Incorporated
e. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group
f. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated

2. Source Limitations: Obtain products from single manufacturer.
3. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.

4. Standard Features: Threaded bushing with insulated throat and mechanical-type wire terminal.

2.5 GROUNDING AND BONDING HUBS

A. UL KDER - Grounding and Bonding Hub:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. Arlington Industries, Inc.
c. Burndy; brand of Hubbell Electrical Solutions; Hubbell Incorporated
d. Crouse-Hinds; brand of Eaton, Electrical Sector
e. Greaves Corp.; Essex Products Group, Inc.
f. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group

g. Penn-Union Corp.; subsidiary of Nesco, Inc.

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.

3. Standard Features: Insulated, gasketed, watertight hub with mechanical-type wire terminal.

2.6 GROUNDING AND BONDING CONNECTORS

A. UL KDER - Pressure-Type Grounding and Bonding Busbar Cable Connector:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. Burndy; brand of Hubbell Electrical Solutions; Hubbell Incorporated

2. Source Limitations: Obtain products from single manufacturer.
3. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.
b. Grounding and Bonding Equipment for Communications: UL CCN KDSH; including UL 467.

4. Standard Features: Copper or copper alloy, for compression bonding of one or more conductor directly to copper busbar. Listed for direct burial.

B. UL KDER - Lay-In Lug Mechanical-Type Grounding and Bonding Busbar Terminal:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. Chatsworth Products, Inc.
c. Greaves Corp.; Essex Products Group, Inc.
d. ILSCO; brand of ECM Industries LLC; division of nVent Electric plc

2. Source Limitations: Obtain products from single manufacturer.
3. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.

b. Grounding and Bonding Equipment for Communications: UL CCN KDSH; including UL 467.

4. Standard Features: Mechanical-type, aluminum terminal with set screw.

C. UL KDER - Crimped Lug Pressure-Type Grounding and Bonding Busbar Terminal:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. Harger Lightning & Grounding; business of Harger, Inc.
c. ILSCO; brand of ECM Industries LLC; division of nVent Electric plc

2. Source Limitations: Obtain products from single manufacturer.
3. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.
b. Grounding and Bonding Equipment for Communications: UL CCN KDSH; including UL 467.

4. Standard Features: Cast silicon bronze, solderless compression-type wire terminals; with long barrel and two holes spaced on 5/8 or 1 inch centers for two-bolt connection to busbar.

D. UL KDER - Split-Bolt Service-Post Pressure-Type Grounding and Bonding Busbar Terminal:

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. Panduit Corp

2. Source Limitations: Obtain products from single manufacturer.
3. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.
b. Grounding and Bonding Equipment for Communications: UL CCN KDSH; including UL 467.

4. Standard Features: Bolts that surround cable and bond to cable under compression when nut is tightened after assembly is screwed into busbar opening.

E. UL KDER - Crimped Pressure-Type Grounding and Bonding Cable Connector:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the

following:

a. ABB Electrification Installations Products
b. allG Fabrication (formerly ALT)
c. Burndy; brand of Hubbell Electrical Solutions; Hubbell Incorporated
d. ILSCO; brand of ECM Industries LLC; division of nVent Electric plc

2. Source Limitations: Obtain products from single manufacturer.
3. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.
b. Grounding and Bonding Equipment for Communications: UL CCN KDSH; including UL 467.

4. Standard Features: Crimp-and-compress connectors that bond to conductor when connector is compressed around conductor.

a. Copper, C and H shaped.

F. UL KDER - Split-Bolt Pressure-Type Grounding and Bonding Cable Connector:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. allG Fabrication (formerly ALT)
c. ERICO; brand of nVent Electrical plc
d. Greaves Corp.; Essex Products Group, Inc.

2. Source Limitations: Obtain products from single manufacturer.
3. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.
b. Grounding and Bonding Equipment for Communications: UL CCN KDSH; including UL 467.

4. Standard Features: Bolts that surround cable and bond to cable under compression when nut is tightened.

a. Copper.

PART 3 - EXECUTION

3.1 INSTALLATION OF GROUNDING AND BONDING

A. Comply with manufacturer's published instructions.

B. Reference Standards:

1. Electrical Construction: ICC IBC, ICC IFC, NFPA 1, NFPA 70, and NECA NEIS 1.
2. Electrical Maintenance: NFPA 70B.
3. Electrical Safety: NFPA 70E.
4. Grounding and Bonding: NECA NEIS 331 and Article 250 of NFPA 70.
5. Communications Work: BICSI N1.
6. Work in ITE Rooms: NFPA 75.
7. Work in Health Care Facilities: NFPA 99 and Article 517 of NFPA 70.
8. Emergency and Standby Power Work: NFPA 110, NFPA 111, and NECA NEIS 416.
9. Work in Confined Spaces: NFPA 350.
10. Work in Basements and Other Developed Subterranean Spaces: NFPA 520.
11. Ground Bonding Common with Lightning Protection System: Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system. Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor, and install in conduit.
12. Consult Architect for resolution of conflicting requirements.

C. Special Techniques:

1. Grounding and Bonding Conductors:

    a. 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.

2. Grounding and Bonding Connectors: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact are galvanically compatible.

    a. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
    b. Make connections with clean, bare metal at points of contact.
    c. Make aluminum-to-steel connections with stainless steel separators and mechanical clamps.
    d. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
    e. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
    f. 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 adjacent parts.
2) Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
3) Use exothermic-welded connectors for outdoor locations; if disconnect-type connection is required, use bolted clamp.

3. Equipment Grounding and Bonding:

a. Install insulated equipment grounding conductors with feeders and branch circuits.
b. 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.
7) Armored and metal-clad cable runs.
8) Busway Supply Circuits: Install insulated equipment grounding conductor from grounding bus in switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.
9) X-Ray Equipment Circuits: Install insulated equipment grounding conductor in circuits supplying x-ray equipment.

c. Poles Supporting Outdoor Lighting Fixtures: Bond insulated equipment grounding conductor to equipment grounding terminal inside pole base.

3.2 FIELD QUALITY CONTROL FOR GROUNDING AND BONDING

A. Administrant for Electrical Power Tests and Inspections:

1. Contractor will engage qualified electrical testing and inspecting agency to administer and perform tests and inspections.
2. Engage qualified electrical testing and inspecting agency to administer and perform tests and inspections.
3. Engage factory-authorized service representative to administer and perform tests and inspections on components, assemblies, and equipment installations, including connections.
4. Administer and perform tests and inspections with assistance of factory-authorized service representative.

B. Field tests and inspections must be witnessed by authorities having jurisdiction.

C. Tests and Inspections:

1. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with calibrated torque wrench in accordance with manufacturer's published instructions.

D. Nonconforming Work:

1. Grounding system will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective components and retest.

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. Support systems.
2. Mounting, anchoring, and attachment components.
3. Installation of fabricated metal supports.
4. Installation of concrete bases.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" specifies additional requirements applicable to coordinating, scheduling, and sequencing of the Work specified in this Section.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:

a. Slotted support systems, hardware, and accessories.
b. Clamps.
c. Hangers.
d. Sockets.
e. Eye nuts.
f. Fasteners.
g. Anchors.
h. Saddles.
i. Brackets.

2. Include rated capacities and furnished specialties and accessories.

B. Shop Drawings: For fabrication and installation details for electrical hangers and support systems.

1. Hangers. Include product data for components.
2. Slotted support systems.
3. Equipment supports.
4. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames

for equipment mounting.

C. Delegated Design Submittals: N/A. Hangars and supports shall be selected and installed in accordance with NEC requirements, manufacturer recommendations, and project conditions. Contractor is responsible for means and methods of mounting, support attachments, and coordination with existing facility conditions.

1.3 INFORMATIONAL SUBMITTALS

A. Welding certificates.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame Rating: Class 1.
2. Self-extinguishing according to ASTM D635.

2.2 SUPPORT SYSTEMS

A. Steel Slotted Support Systems:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. Allied Tube & Conduit; Atkore International
c. Atkore Unistrut
d. CADDY; brand of nVent Electrical plc
e. Cooper B-line; brand of Eaton, Electrical Sector
f. Flex-Strut Inc.
g. G-Strut
h. Gripple Inc.
i. Haydon Corporation
j. Metal Ties Innovation
k. MIRO Industries Inc.
l. Rocket Rack; Robroy Industries
m. Wesanco/ZSi-Foster; an Ideal Tridon Group Company

2. Standard Features: Preformed steel channels and angles with minimum 13/32 inch diameter holes at a maximum of 8 inch on center in at least one surface.

a. Referenced Standard: MFMA-4 factory-fabricated components for field assembly.

b. Material for Channel, Fittings, and Accessories: Galvanized steel.
c. Channel Width: 1-1/4 inch.
d. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
e. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
f. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
g. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Conduit and Cable Support Devices:

1. Standard Features: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

C. Support for Conductors in Vertical Conduit:

1. Standard Features: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for nonarmored electrical conductors or cables in riser conduits. Plugs must have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body must be made of malleable iron.

D. Structural Steel for Fabricated Supports and Restraints:

1. Standard Features: ASTM A36/A36M steel plates, shapes, and bars; black and galvanized.

2.3 MOUNTING, ANCHORING, AND ATTACHMENT COMPONENTS

A. Powder-Actuated Fasteners:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hilti, Inc.
b. ITW Ramset/Red Head; Illinois Tool Works, Inc.
c. MKT Fastening, LLC

2. Standard Features: 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.

B. Through Bolts:

1. Standard Features: Structural type, hex head, and high strength. Comply with ASTM F3125/F3125M, Grade A325.

C. Toggle Bolts:

1. Standard Features: All steel springhead type.

D. Hanger Rods:

1. Standard Features: Threaded steel.

PART 3 - EXECUTION

3.1 INSTALLATION OF HANGERS AND SUPPORTS

A. Comply with manufacturer's published instructions.

B. Reference Standards for Installation: Unless more stringent installation requirements are specified in the Contract Documents or manufacturer's published instructions, comply with the following:

1. Electrical Construction: ICC IBC, ICC IFC, NFPA 1, NFPA 70, and NECA NEIS 1.
2. Hot Work: NFPA 51B.
3. Work in Confined Spaces: NFPA 350.
4. Work in Basements and Other Developed Subterranean Spaces: NFPA 520.
5. Installation of Steel Conduit: NECA NEIS 101.
6. Installation of Aluminum Conduit: NECA NEIS 102.
7. Installation of Metal Cable Tray Systems: NECA NEIS 105.
8. Installation of Nonmetallic Cable Tray Systems: NECA NEIS 111.
9. Consult Architect for resolution of conflicting requirements.

C. Special Installation Techniques:

1. 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 must be weight of supported components plus 200 lb.
2. 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:

a. To Wood: Fasten with lag screws or through bolts.
b. To New Concrete: Bolt to concrete inserts.
c. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
d. To Existing Concrete: Expansion anchor fasteners.
e. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inch thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inch thick.
f. To Steel: Beam clamps (MSS SP-58, Type 19, 21, 23, 25, or 27), complying **with**

MSS SP-69.

g. To Light Steel: Sheet metal screws.
h. 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 comply with seismic-restraint strength and anchorage requirements.

3. Drill holes for expansion anchors in concrete at locations and to depths that avoid the need for reinforcing bars.

D. Interfaces with Other Work:

1. Provide seismic controls with hangers and supports.
2. Touchup Finishes:

a. 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. Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.
c. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A780.

3. Installation of Fabricated Metal Supports:

a. Provide 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. Submit welding certificates.

END OF SECTION 26 05 29

SECTION 26 05 33.13 - CONDUITS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Type EMT duct raceways and elbows.
2. Type HDPE and Type EPEC duct raceways and fittings.
3. Type IMC duct raceways.
4. Type PVC duct raceways and fittings.
5. Fittings for conduit, tubing, and cable.
6. Joint compounds.
7. Solvent cements.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" specifies additional coordination, scheduling, sequencing, submittal, and installation requirements applicable to the Work for electrical, communications, and electronic safety and security systems on the Project, including wiring methods.
2. Section 078413 "Penetration Firestopping" specifies firestopping referenced by this Section.
3. Section 260519 "Low-Voltage for Electrical Power Conductors and Cables" specifies nonmetallic underground conduit with conductors (Type NUCC).
4. Section 260529 "Hangers and Supports for Electrical Systems" specifies conduit hangers and supports referenced by this Section.
5. Section 260553 "Identification for Electrical Systems" specifies electrical equipment labels.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Sustainable Design Submittals:

1. Product data for sustainable design features for each type of product.

C. Field quality-control reports.

1.3 INFORMATIONAL SUBMITTALS

A. Manufacturer's published instructions.

PART 2 - PRODUCTS

2.1 TYPE EMT DUCT RACEWAYS AND ELBOWS

A. UL FJMX - Aluminum Electrical Metal Tubing (EMT-A) and Elbows:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Conduit; Norsk Hydro ASA, Hydro Extrusion USA LLC
b. Patriot Aluminum Products, LLC
c. Penn Aluminum Conduit & EMT; Penn Aluminum International LLC; Berkshire Hathaway

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. UL CCN FJMX; including UL 797A.

3. Standard Features:

a. Material: Aluminum.
b. Minimum Trade Size: Metric designator 21 (trade size 3/4).

2.2 TYPE ENT DUCT RACEWAYS AND FITTINGS

A. UL FKHU - Electrical Nonmetallic Tubing (ENT) and Fittings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. Cantex Inc.
c. JM Eagle

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. UL CCN FKHU; including UL 1653.

3. Other Available Features Required by the Project:

a. Minimum Trade Size: Metric designator 21 (trade size 3/4).
b. Fittings:

1) Mechanically Attached Fittings: UL 1653.

2) Solvent-Attached Fittings: UL 651.

B. UL EAZX - Schedule 80 Electrical HDPE Underground Conduit (HDPE-80):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Blue Diamond Industries, LLC
b. JM Eagle
c. Petroflex North America
d. Prysmian Cables and Systems; Prysmian Group North America
e. Southwire Company, LLC

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. UL CCN EAZX; including UL 651A.

3. Standard Features:

a. Dimensional Specifications: Schedule 80.

4. Other Available Features Required by the Project:

a. Minimum Trade Size: Metric designator 21 (trade size 3/4).

C. UL DYIX - Galvanized-Steel Electrical Rigid Metal Conduit (ERMC-S-G), Elbows, Couplings, and Nipples:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Allied Tube & Conduit; Atkore International
b. Calconduit; Atkore International
c. Crouse-Hinds; brand of Eaton, Electrical Sector
d. Killark; brand of Hubbell Electrical Solutions; Hubbell Incorporated
e. Patriot Aluminum Products, LLC
f. Republic Conduit; Nucor Corporation, Nucor Tubular Products
g. Rymco USA brand; manufactured and listed by subsidiary Conduit S.A. de C.V
h. Topaz Lighting & Electric
i. Western Tube; Zekelman Industries
j. Wheatland Tube; Zekelman Industries

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. UL CCN DYIX; including UL 6.

3. Standard Features:

a. Exterior Coating: Zinc.
b. Interior Coating: Zinc with organic top coating.
c. Minimum Trade Size: Metric designator 21 (trade size 3/4).

4. Other Available Features Required by the Project:

a. Colors: As indicated on the Drawings.

2.3 TYPE PVC DUCT RACEWAYS AND FITTINGS

A. UL DZYR - Schedule 40 Rigid PVC Conduit (PVC-40) and Fittings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following]:

a. ABB Electrification Installations Products
b. Calconduit; Atkore International
c. JM Eagle
d. NAPCO; Westlake Chemical Corp.
e. National Pipe and Plastic, Inc. (Oldcastle)
f. Opti-Com Manufacturing Network, Inc (OMNI
g. Topaz Lighting & Electric

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. UL CCN DZYR; including UL 651.

3. Standard Features:

a. Dimensional Specifications: Schedule 40.
b. Minimum Trade Size: Metric designator 21 (trade size 3/4).
c. Markings: For use with maximum 90 deg C wire.

B. UL DZYR - Schedule 80 Rigid PVC Conduit (PVC-80) and Fittings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following]:

a. ABB Electrification Installations Products
b. Calconduit; Atkore Internationa
c. JM Eagle
d. National Pipe and Plastic, Inc. (Oldcastle)
e. Opti-Com Manufacturing Network, Inc (OMNI)
f. Topaz Lighting & Electric

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

   a. UL CCN DZYR; including UL 651.

3. Standard Features:

   a. Dimensional Specifications: Schedule 80.
   b. Minimum Trade Size: Metric designator 21 (trade size 3/4).
   c. Markings: For use with maximum 90 deg C wire.

2.4 JOINT COMPOUNDS

A. UL FOIZ - Electrically Conductive Corrosion-Resistant Compound for Threaded Conduit:

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. ABB Electrification Installations Products

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

   a. UL CCN FOIZ; including UL Subject 2419.

2.5 SOLVENT CEMENTS

A. UL VBEW - Solvent Cements for Nonmetallic Duct Raceways and Fittings:

1. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

   a. Solvent Cements: UL CCN VBEW; including UL 340.
   b. Solvent Cement Compatibility with PVC Conduit Fittings: UL CCN DWTT; including UL 514B. Follow solvent manufacturer's published instructions.
   c. Solvent Cement Compatibility with Rigid PVC Conduit: UL CCN DZYR; including UL 651. Follow solvent manufacturer's published instructions.
   d. Solvent Cement Compatibility with Rigid EPEC and HDPE Underground Conduit: UL CCN EAZX; including UL 651A. Follow solvent manufacturer's published instructions.

PART 3 - EXECUTION

3.1 SELECTION OF CONDUITS FOR ELECTRICAL SYSTEMS

A. Unless more stringent requirements are specified in the Contract Documents or manufacturer's published instructions, comply with NFPA 70 for selection of duct raceways. Consult Architect for resolution of conflicting requirements.

B. Special Instructions Regarding HDPE Conduits: Although Article 353 of NFPA 70 permits use of HDPE conduits where encased in concrete aboveground, UL CCN EAZX listing requirements state that HDPE and EPEC underground conduits are intended only for use where direct buried with or without being encased in concrete. Specified Type HDPE and Type EPEC underground conduits are not permitted to be used aboveground on the Project.

C. Outdoors:

1. Exposed and Not Subject to Physical Damage: IMC.
2. Concealed Aboveground: IMC.
3. Direct Buried: PVC-80.

D. Indoors:

1. Exposed and Not Subject to Physical Damage: EMT.
2. Concealed in Ceilings and Interior Walls and Partitions: EMT.
3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC.

E. Duct Fittings: Select fittings in accordance with NEMA FB 2.10 guidelines.

1. ERMC and IMC: Provide threaded-type fittings unless otherwise indicated.

3.2 INSTALLATION OF CONDUITS FOR ELECTRICAL SYSTEMS

A. Comply with manufacturer's published instructions.

B. Reference Standards for Installation: Unless more stringent installation requirements are specified in the Contract Documents or manufacturer's published instructions, comply with the following:

1. Electrical Construction: ICC IBC, ICC IFC, NFPA 1, NFPA 70, and NECA NEIS 1.
2. Electrical Safety: NFPA 70E.
3. Commissioning of Active and Passive Fire Protection Features: NFPA 3 and NFPA 4.
4. Grounding and Bonding: NECA NEIS 331 and Article 250 of NFPA 70.
5. Communications Work: BICSI N1.
6. Life Safety and Means of Egress Work: NFPA 101.
7. Emergency and Standby Power Work: NFPA 110, NFPA 111, and NECA NEIS 416.
8. Work in Confined Spaces: NFPA 350.
9. Work in Basements and Other Developed Subterranean Spaces: NFPA 520.

10. Type EMT-A: Article 358 of NFPA 70 and NECA NEIS 102.
11. Type EMT-SS: Article 358 of NFPA 70 and NECA NEIS 101.
12. Type EMT-S: Article 358 of NFPA 70 and NECA NEIS 101.
13. Type ENT: Article 362 of NFPA 70 and NECA NEIS 102.
14. Type HDPE and Type EPEC: Article 353 of NFPA 70 and NECA NEIS 111.
15. Type ERMC-A: Article 344 of NFPA 70 and NECA NEIS 102.
16. Type ERMC-SS: Article 344 of NFPA 70 and NECA NEIS 101.
17. Type ERMC-S: Article 344 of NFPA 70 and NECA NEIS 101.
18. Type FMC-S: Article 348 of NFPA 70 and NECA NEIS 101.
19. Type FMC-A: Article 348 of NFPA 70 and NECA NEIS 102.
20. Type FMT: Article 360 of NFPA 70 and NECA NEIS 101.
21. Type IMC: Article 342 of NFPA 70 and NECA NEIS 101.
22. Type LFMC: Article 350 of NFPA 70 and NECA NEIS 101.
23. Type LFNC: Article 342 of NFPA 70 and NECA NEIS 111.
24. Type PVC: Article 356 of NFPA 70 and NECA NEIS 111.
25. Type RTRC: Article 355 of NFPA 70 and NECA NEIS 111.
26. Expansion Fittings: NEMA FB 2.40.
27. Consult Architect for resolution of conflicting requirements.

C. Special Installation Techniques:

1. General Requirements for Installation of Duct Raceways:

   a. Complete duct raceway installation before starting conductor installation.
   b. Provide stub-ups through floors with coupling threaded inside for plugs, set flush with finished floor. Plug coupling until conduit is extended above floor to final destination or a minimum of 2 ft above finished floor.
   c. Install no more than equivalent of three 90-degree bends in conduit run except for control wiring conduits, for which no more than equivalent of two 90-degree fewer bends are permitted. Support within 12 inch of changes in direction.
   d. Make bends in duct raceway using large-radius preformed ells except for parallel bends. Field bending must be in accordance with NFPA 70 minimum radii requirements. Provide only equipment specifically designed for material and size involved.
   e. Conceal conduit within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
   f. Support conduit within 12 inch of enclosures to which attached.
   g. Install duct sealing fittings at accessible locations in accordance with NFPA 70 and fill them with listed sealing compound. For concealed duct raceways, install fitting in flush steel box with blank cover plate having finish similar to that of adjacent plates or surfaces. Install duct sealing fittings in accordance with NFPA 70.
   h. Install devices to seal duct raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal interior of duct raceways at the following points:

      1) Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
      2) Where an underground service duct raceway enters a building or structure.
      3) Conduit extending from interior to exterior of building.

4) Conduit extending into pressurized duct raceway and equipment.
5) Conduit extending into pressurized zones that are automatically controlled to maintain different pressure set points.
6) Where otherwise required by NFPA 70.

i. Do not install conduits within 2 inch of the bottom side of a metal deck roof.
j. Keep duct raceways at least 6 inch away from parallel runs of flues and steam or hot-water pipes. Install horizontal duct raceway runs above water and steam piping.
k. Cut conduit perpendicular to the length. For conduits metric designator 53 (trade size 2) and larger, use roll cutter or a guide to make cut straight and perpendicular to the length. Ream inside of conduit to remove burrs.
l. Install pull wires in empty duct raceways. Provide polypropylene or monofilament plastic line with not less than 200 lb tensile strength. Leave at least 12 inch of slack at both ends of pull wire. Cap underground duct raceways designated as spare above grade alongside duct raceways in use.
m. Install duct raceways square to the enclosure and terminate at enclosures without hubs with locknuts on both sides of enclosure wall. Install locknuts hand tight, plus one-quarter turn more.

1) Termination fittings with shoulders do not require two locknuts.

n. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to metric designator 35 (trade size 1-1/4) and insulated throat metal bushings on metric designator 41 (trade size 1-1/2) and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.

2. Types EMT-A, ERMC-A, and FMC-A: Do not install aluminum duct raceways or fittings in contact with concrete or earth.
3. Types ERMC and IMC:

a. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound that maintains electrical conductivity to threads of duct raceway and fittings before making up joints. Follow compound manufacturer's published instructions.

4. Type ERMC-S-PVC:

a. Follow manufacturer's installation instructions for clamping, cutting, threading, bending, and assembly.
b. Provide PVC-coated sealing locknut for exposed male threads transitioning into female NPT threads that do not have sealing sleeves, including transitions from PVC couplings/female adapters to Type ERMC-S-PVC elbows in direct-burial applications. PVC-coated sealing locknuts must not be used in place of conduit hub. PVC-coated sealing locknut must cover exposed threads on Type ERMC-S-PVC duct raceway.
c. Coat field-cut threads on PVC-coated duct raceway with manufacturer-approved corrosion-preventing conductive compound prior to assembly.

5. Types FMC, LFMC, and LFNC:

    a. Provide a maximum of 36 inch of flexible conduit for recessed and semi recessed luminaires, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

6. Types PVC, HDPE, and EPEC:

    a. Do not install Type PVC, Type HDPE, or Type EPEC conduit where ambient temperature exceeds 122 deg F. Conductor ratings must be limited to 75 deg C except where installed in a trench outside buildings with concrete encasement, where 90 deg C conductors are permitted.
    b. Comply with manufacturer's published instructions for solvent welding and fittings.
    c. Join joints with solvent cement in accordance with manufacturer's published instructions and allowed to cure before handling. Joints to be bent, pushed, or pulled must set for minimum 24 h after joining.

7. Stub-ups to Above Recessed Ceilings:

    a. Provide EMT, IMC, or ERMC for duct raceways.
    b. Provide a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.

8. Duct Fittings: Install fittings in accordance with NEMA FB 2.10 guidelines.

    a. ERMC-S-PVC: Provide only fittings listed for use with this type of conduit. Patch and seal joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Provide sealant recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer.
    b. EMT: Provide compression, steel fittings. Comply with NEMA FB 2.10.
    c. Flexible Conduit: Provide only fittings listed for use with flexible conduit type. Comply with NEMA FB 2.20.

9. Expansion-Joint Fittings:

    a. Install in runs of aboveground PVC that are located where environmental temperature change may exceed 30 deg F and that have straight-run length that exceeds 25 ft. Install in runs of aboveground ERMC and EMT conduit that are located where environmental temperature change may exceed 100 deg F and that have straight-run length that exceeds 100 ft.
    b. Install type and quantity of fittings that accommodate temperature change listed for the following locations:

        1) Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F temperature change.
        2) Outdoor Locations Exposed to Direct Sunlight: 155 deg F temperature change.
        3) Indoor Spaces Connected with Outdoors without Physical Separation:

125 deg F temperature change.

4) Attics: 135 deg F temperature change.

c. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F of temperature change for PVC conduits. Install fitting(s) that provide expansion and contraction for at least 0.000078 inch per foot of length of straight run per deg F of temperature change for metal conduits.

d. Install expansion fittings at locations where conduits cross building or structure expansion joints.

e. Install expansion-joint fitting with position, mounting, and piston setting selected in accordance with manufacturer's published instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.

D. Interfaces with Other Work:

1. Firestop penetrations of fire-rated floor and wall assemblies.
2. Provide conduit hangers and supports.
3. Coordinate installation of new products for with existing conditions.

3.3 FIELD QUALITY CONTROL OF CONDUITS FOR ELECTRICAL SYSTEMS

A. Administrant for Electrical Power Tests and Inspections:

1. Engage factory-authorized service representative to administer and perform tests and inspections on components, assemblies, and equipment installations, including connections.
2. Administer and perform tests and inspections.

B. Tests and Inspections:

1. Perform manufacturer's recommended tests and inspections.
2. Pull solid aluminum or wood test mandrel through duct to prove joint integrity and adequate bend radii, and test for out-of-round duct. Provide minimum 12 inch long mandrel equal to duct size minus 1/4 inch. If obstructions are indicated, remove obstructions and retest.
3. Conduit Placement:

a. Verify that center-line location and offsets are in accordance with the Drawings.
b. Verify that hangers and supports for conduits are attached to structure in accordance with the Drawings.
c. Verify that nuts on bolts or hanger rods are secure.
d. Verify that space between raceways and cored holes are filled with non-shrinking grout or other approved material indicated on the Drawings and the Specifications.
e. Verify that expansion devices are installed at locations indicated on the Drawings and the Specifications.
f. Verify that ends are cut square to provide flush-butting surfaces when spliced and

inside edges are free of burrs that could impede installation of cables.

g. Verify minimum separation of utilities, or that approved mechanical protection has been provided to surrounding conduit(s) where minimum separation cannot be achieved.

4. Document all changes on Record Drawings.

C. Nonconforming Work:

1. Conduit will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective units and retest.

D. Field Quality-Control Reports: Collect, assemble, and submit test and inspection reports.

END OF SECTION 26 05 33.13

SECTION 26 05 33.16 - BOXES AND COVERS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metallic outlet boxes, device boxes, rings, and covers.
2. Nonmetallic outlet boxes, device boxes, rings, and covers.
3. Junction boxes and pull boxes.
4. Cover plates for device boxes.
5. Hoods for outlet boxes.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" specifies additional coordination, scheduling, sequencing, submittal, and installation requirements applicable to the Work for electrical, communications, and electronic safety and security systems on the Project, including wiring methods.
2. Section 260526 "Grounding and Bonding for Electrical Systems" specifies grounding and bonding referenced by this Section.
3. Section 260553 "Identification for Electrical Systems" specifies electrical equipment labels and warning signs installed by this Section.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each type of product requiring samples for source quality control.

C. Shop Drawings: Prepare and submit the following:

1. Shop Drawings for Floor Boxes: Show that floor boxes are located to avoid interferences and are structurally allowable. Indicate floor thickness at location where boxes are embedded in concrete floors and underfloor clearances where boxes are installed in raised floors.

D. Sustainable Design Submittals:

1. Product data for sustainable design features for each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Manufacturer's published instructions.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Products or components listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2.2 METALLIC OUTLET BOXES, DEVICE BOXES, RINGS, AND COVERS

A. UL QCIT - Metallic Outlet Boxes and Covers:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. Appleton; Emerson Electric Co., Automation Solutions
c. Arlington Industries, Inc.
d. Crouse-Hinds; brand of Eaton, Electrical Sector
e. Hubbell Premise Wiring; brand of Hubbell Electrical Solutions; Hubbell Incorporated
f. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated
g. Pass & Seymour; Legrand North America, LLC
h. Wiremold; Legrand North America, LLC

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. UL CCN QCIT; including UL 514A.

3. Standard Features:

a. Box having pry out openings, knockouts, threaded entries, or hubs in either the sides or the back, or both, for entrance of conduit, conduit or cable fittings, or cables, with provisions for mounting outlet box cover, but without provisions for mounting wiring device directly to box.
b. Material: Sheet aluminum.
c. Sheet Metal Depth: Minimum 2.5 inch.

B. UL QCIT - Metallic Conduit Bodies:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. Appleton; Emerson Electric Co., Automation Solutions

c. Crouse-Hinds; brand of Eaton, Electrical Sector
d. Killark; brand of Hubbell Electrical Solutions; Hubbell Incorporated
e. Pass & Seymour; Legrand North America, LLC

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. UL CCN QCIT; including UL 514A.

3. Standard Features: Means for providing access to interior of conduit or tubing system through one or more removable covers at junction or terminal point. In the United States, conduit bodies are listed in accordance with outlet box requirements.

C. UL QCIT - Metallic Device Boxes:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. Appleton; Emerson Electric Co., Automation Solutions
c. Arlington Industries, Inc.
d. Crouse-Hinds; brand of Eaton, Electrical Sector
e. Hubbell Premise Wiring; brand of Hubbell Electrical Solutions; Hubbell Incorporated Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated
f. Killark; brand of Hubbell Electrical Solutions; Hubbell Incorporated

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. UL CCN QCIT; including UL 514A.

3. Standard Features:

a. Box with provisions for mounting wiring device directly to box.
b. Material: Sheet aluminum.
c. Sheet Metal Depth: minimum 2.5 inch.

D. UL QCIT - Metallic Extension Rings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. Appleton; Emerson Electric Co., Automation Solutions
c. Cooper B-line; brand of Eaton, Electrical Sector
d. Crouse-Hinds; brand of Eaton, Electrical Sector
e. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell

Incorporated
f. Pass & Seymour; Legrand North America, LLC

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. UL CCN QCIT; including UL 514A.

3. Standard Features: Ring intended to extend sides of outlet box or device box to increase box depth, volume, or both.

2.3 NONMETALLIC OUTLET BOXES, DEVICE BOXES, RINGS, AND COVERS

a. of available colors and flooring inserts for each type of floor box.

B. UL QCMZ - Nonmetallic Outlet Boxes and Covers:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. Allied Tube & Conduit; Atkore International
c. Appleton; Emerson Electric Co., Automation Solutions
d. Hubbell Premise Wiring; brand of Hubbell Electrical Solutions; Hubbell Incorporated
e. Leviton Manufacturing Co., Inc.
f. Panduit Corp
g. Pass & Seymour; Legrand North America, LLC
h. Wiremold; Legrand North America, LLC

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. UL CCN QCMZ; including UL 514C.

3. Standard Features: Box having pry out openings, knockouts, threaded entries, or hubs in either the sides or the back, or both, for entrance of conduit, conduit or cable fittings, or cables, with provisions for mounting outlet box cover, but without provisions for mounting wiring device directly to box.

C. UL QCMZ - Nonmetallic Conduit Bodies:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. Allied Tube & Conduit; Atkore International

c. Arlington Industries, Inc.

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. UL CCN QCMZ; including UL 514C.

3. Standard Features: Means for providing access to interior of conduit or tubing system through one or more removable covers at junction or terminal point. In the United States, conduit bodies are listed in accordance with outlet box requirements.

D. UL QCMZ - Nonmetallic Device Boxes:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. Allied Tube & Conduit; Atkore International
c. Arlington Industries, Inc.
d. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated
e. Pass & Seymour; Legrand North America, LLC

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. UL CCN QCMZ; including UL 514C.

3. Standard Features: Box with provisions for mounting wiring device directly to box.

E. UL QCMZ - Nonmetallic Extension Rings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. Allied Tube & Conduit; Atkore International
c. Arlington Industries, Inc.
d. Arrow Hart, Wiring Devices; Eaton, Electrical Sector
e. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. UL CCN QCMZ; including UL 514C.

3. Standard Features: Ring intended to extend sides of outlet box or device box to increase box depth, volume, or both.

2.4 JUNCTION BOXES AND PULL BOXES

A. UL BGUZ - Indoor Sheet Metal Junction and Pull Boxes:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Appleton; Emerson Electric Co., Automation Solution
   b. Cooper B-line; brand of Eaton, Electrical Sector
   c. Hoffman; brand of nVent Electrical plc
   d. Hubbell Industrial Controls; brand of Hubbell Electrical Solutions; Hubbell Incorporated
   e. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated
   f. Square D; Schneider Electric USA

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

   a. UL CCN BGUZ; including UL 50 and UL 50E.

3. Standard Features:

   a. Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
   b. Degree of Protection: Type 1.

B. UL BGUZ - Indoor Polymeric Junction and Pull Boxes:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. ABB Electrification Installations Products
   b. Allied Tube & Conduit; Atkore International
   c. Cantex Inc.
   d. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

   a. UL CCN BGUZ; including UL 50 and UL 50E.

3. Standard Features:

a. Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
b. Degree of Protection: Type 1.

C. UL BGUZ - Outdoor Sheet Metal Junction and Pull Boxes:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Adalet; division of Scott Fetzer Co.
b. Appleton; Emerson Electric Co., Automation Solution
c. Cooper B-line; brand of Eaton, Electrical Sector
d. Hubbell Industrial Controls; brand of Hubbell Electrical Solutions; Hubbell Incorporated
e. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated
f. Square D; Schneider Electric USA

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. UL CCN BGUZ; including UL 50 and UL 50E.

3. Standard Features:

a. Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
b. Degree of Protection: Type 3R.

D. UL BGUZ - Outdoor Polymeric Junction and Pull Boxes:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. Allied Tube & Conduit; Atkore International
c. Cantex Inc.
d. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. UL CCN BGUZ; including UL 50 and UL 50E.

3. Standard Features:

a. Box with a blank cover that serves the purpose of joining different runs of raceway

or cable.

b. Degree of Protection: Type 3R.

2.5 COVER PLATES FOR DEVICE BOXES

A. UL QCIT or QCMZ - Metallic Cover Plates for Device Boxes:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. ABB Electrification Installations Products
   b. Appleton; Emerson Electric Co., Automation Solution
   c. Arrow Hart, Wiring Devices; Eaton, Electrical Sector
   d. Crouse-Hinds; brand of Eaton, Electrical Sector
   e. Hubbell Premise Wiring; brand of Hubbell Electrical Solutions; Hubbell Incorporated
   f. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated
   g. Leviton Manufacturing Co., Inc.
   h. Panduit Corp
   i. Pass & Seymour; Legrand North America, LLC
   j. Wiremold; Legrand North America, LLC

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

   a. UL CCN QCIT or UL CCN QCMZ; including UL 514D.

3. Standard Features:

   a. Cover plate-Securing Screws: Metal with head color to match cover plate finish.
   b. Damp and Wet Locations: Listed, labeled, and marked for location and use. Provide gaskets and accessories necessary for compliance with listing.
   c. Cover Plate Material: Type 302/304 non-magnetic stainless steel with brushed finish.

B. UL QCIT or QCMZ - Nonmetallic Cover Plates for Device Boxes:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. ABB Electrification Installations Products
   b. Appleton; Emerson Electric Co., Automation Solutions
   c. Arlington Industries, Inc.
   d. Arrow Hart, Wiring Devices; Eaton, Electrical Sector
   e. Hubbell Premise Wiring; brand of Hubbell Electrical Solutions; Hubbell Incorporated

f. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated
g. Leviton Manufacturing Co., Inc.
h. Panduit Corp
i. Pass & Seymour; Legrand North America, LLC
j. Wiremold; Legrand North America, LLC

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. UL CCN QCIT or UL CCN QCMZ; including UL 514D.

3. Standard Features:

a. Cover Plate-Securing Screws: Metal with head color to match cover plate finish.
b. Damp and Wet Locations: Listed, labeled, and marked for location and use. Provide gaskets and accessories necessary for compliance with listing.
c. Cover Plate Material: 0.060 inch thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device.
d. Color: Must match existing facility device cover plates.

PART 3 - EXECUTION

3.1 SELECTION OF BOXES AND COVERS FOR ELECTRICAL SYSTEMS

A. Unless more stringent requirements are specified in Contract Documents or manufacturers' published instructions, comply with NFPA 70 for selection of boxes and enclosures. Consult Architect for resolution of conflicting requirements.

B. Degree of Protection:

1. Indoors:

a. Type 1 unless otherwise indicated.

C. Exposed Boxes Installed Less Than 2.5 m (8 ft) Above Floor:

1. Boxes with knockouts or unprotected openings are prohibited.
2. Provide exposed cover. Flat covers with angled mounting slots or knockouts are prohibited.

3.2 INSTALLATION OF BOXES AND COVERS FOR ELECTRICAL SYSTEMS

A. Comply with manufacturer's published instructions.

B. Reference Standards for Installation: Unless more stringent installation requirements are

specified in Contract Documents or manufacturers' published instructions, comply with the following:

1. Electrical Construction: ICC IBC, ICC IFC, NFPA 1, NFPA 70, and NECA NEIS 1.
2. Electrical Safety: NFPA 70E.
3. Commissioning of Active and Passive Fire Protection Features: NFPA 3 and NFPA 4.
4. Grounding and Bonding: NECA NEIS 331 and Article 250 of NFPA 70.
5. Communications Work: BICSI N1.
6. Life Safety and Means of Egress Work: NFPA 101.
7. Emergency and Standby Power Work: NFPA 110, NFPA 111, and NECA NEIS 416.
8. Work in Confined Spaces: NFPA 350.
9. Work in Basements and Other Developed Subterranean Spaces: NFPA 520.
10. Outlet, Device, Pull, and Junction Boxes: Article 314 of NFPA 70.
11. Consult Architect for resolution of conflicting requirements.

C. Special Installation Techniques:

1. Provide boxes in wiring and raceway systems wherever required for pulling of wires, making connections, and mounting of devices or fixtures.
2. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to **center** of box unless otherwise indicated.
3. 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. Prepare block surfaces to provide a flat surface for a raintight connection between box and cover plate or supported equipment and box, whether installed indoors or outdoors.
4. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.
5. Locate boxes so that cover or plate will not span different building finishes.
6. Support boxes in recessed ceilings independent of ceiling tiles and ceiling grid.
7. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for purpose.
8. Fasten junction and pull boxes to, or support from, building structure. Do not support boxes by conduits.
9. Set metal floor boxes level and flush with finished floor surface.
10. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.
11. Do not install aluminum boxes, enclosures, or fittings in contact with concrete or earth.
12. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to ensure a continuous ground path.
13. Boxes and Enclosures in Areas or Walls with Acoustical Requirements:

    a. Seal openings and knockouts in back and sides of boxes and enclosures with acoustically rated putty.
    b. Provide gaskets for cover plates and covers.

D. Interfaces with Other Work:

1. Identification: Provide labels for boxes and associated electrical equipment.

    a. Identify field-installed conductors, interconnecting wiring, and components.
    b. Label each enclosure with engraved metal or laminated-plastic nameplate.
    c. Provide warning signs and arc-flash hazard warning labels for electrical equipment.

3.3 FIELD QUALITY CONTROL OF BOXES AND COVERS

A. Administrant for Electrical Power Tests and Inspections:

1. Engage factory-authorized service representative to administer and perform tests and inspections on components, assemblies, and equipment installations, including connections.
2. Administer and perform tests and inspections with assistance of factory-authorized service representative.

B. Administrant for Fire-Alarm Tests and Inspections:

1. Contractor will engage qualified fire-alarm testing and inspecting agency to administer and perform tests and inspections.
2. Engage qualified fire-alarm testing and inspecting agency to administer and perform tests and inspections.
3. Engage factory-authorized service representative to administer and perform tests and inspections on components, assemblies, and equipment installations, including connections.
4. Administer and perform tests and inspections with assistance of factory-authorized service representative.

C. Field tests and inspections must be witnessed by authorities having jurisdiction.

D. Tests and Inspections:

1. Perform manufacturer's recommended tests and inspections.
2. Perform tests and inspections recommended by standards listed in "Reference Standards for Installation" Paragraph.

E. Nonconforming Work:

1. Boxes and covers will be considered defective if they do not pass tests and inspections.
2. Remove and replace defective units and retest.

F. Field Quality-Control Reports: Collect, assemble, and submit test and inspection reports.

END OF SECTION 26 05 33.16

SECTION 26 05 33.23 - SURFACE RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Surface metal raceways and fittings.
2. Surface nonmetallic raceways.
3. Strut-type channel raceways and fittings.
4. Wireways and auxiliary gutters.

B. Related Requirements:

1. Section 018116 "Facility Environmental Requirements" specifies temperature, humidity, acoustical, and other field conditions applicable to the Work specified in this Section.
2. Section 018123 "Facility Seismic and Wind Criteria" specifies seismic hazard, wind hazard, and other structural design conditions applicable to the Work specified in this Section.
3. Section 260010 "Supplemental Requirements for Electrical" specifies additional coordination, scheduling, sequencing, submittal, and installation requirements applicable to the Work for electrical, communications, and electronic safety and security systems on the Project, including wiring methods.
4. Section 260526 "Grounding and Bonding for Electrical Systems" specifies grounding and bonding referenced by this Section.
5. Section 260553 "Identification for Electrical Systems" specifies warning signs referenced by this Section.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each type of product requiring samples for source quality control.

C. Sustainable Design Submittals:

1. Product data for sustainable design features for each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Manufacturer's published instructions.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Products or components listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

PART 3 - EXECUTION

3.1 INSTALLATION OF SURFACE RACEWAYS FOR ELECTRICAL SYSTEMS

A. Comply with manufacturer's published instructions.

B. Reference Standards for Installation: Unless more stringent installation requirements are specified in Contract Documents or manufacturers' published instructions, comply with the following:

1. Electrical Construction: ICC IBC, ICC IFC, NFPA 1, NFPA 70, and NECA NEIS 1.
2. Electrical Safety: NFPA 70E.
3. Grounding and Bonding: NECA NEIS 331 and Article 250 of NFPA 70.
4. Communications Work: BICSI N1.
5. Work in Confined Spaces: NFPA 350.
6. Work in Basements and Other Developed Subterranean Spaces: NFPA 520.
7. Auxiliary Gutters: Article 366 of NFPA 70.
8. Surface Metal Raceway: Article 386 of NFPA 70.
9. Surface Nonmetallic Raceway: Article 388 of NFPA 70.
10. Consult Architect for resolution of conflicting requirements.

C. Special Installation Techniques:

1. Install surface raceways only where indicated on Drawings.
2. Install surface raceway with a minimum 2 inch radius control at bend points.
3. Secure surface raceway with screws or other anchor-type devices at intervals not exceeding 48 inch and with no less than two supports per straight raceway section. Support surface raceway in accordance with manufacturer's published instructions. Tape and glue are unacceptable support methods.

D. Interfaces with Other Work:

1. Identification: Provide labels for surface raceways and associated electrical equipment.

    a. Identify field-installed conductors, interconnecting wiring, and components.
    b. Provide warning signs.

2. Coordinate installation of new products for with existing conditions.

3.2 FIELD QUALITY CONTROL OF SURFACE RACEWAYS

A. Administrant for Electrical Power Tests and Inspections:

1. Engage factory-authorized service representative to administer and perform tests and inspections on components, assemblies, and equipment installations, including connections.
2. Administer and perform tests and inspections with assistance of factory-authorized service representative.

B. Field tests and inspections must be witnessed by authorities having jurisdiction.

C. Tests and Inspections:

1. Perform manufacturer's recommended tests and inspections.
2. Perform tests and inspections recommended by standards listed in "Reference Standards for Installation" Paragraph.

D. Nonconforming Work:

1. Boxes and covers will be considered defective if they do not pass tests and inspections.
2. Remove and replace defective units and retest.

E. Field Quality-Control Reports: Collect, assemble, and submit test and inspection reports.

END OF SECTION 26 05 33.23

SECTION 26 05 44 - SLEEVES AND SLEEVE SEALS FOR ELECTRICAL RACEWAYS AND CABLING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Round sleeves.
2. Sleeve-seal systems.
3. Sleeve-seal fittings.
4. Grout.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Sustainable Design Submittals:

1. Product Data: For sealants, indicating VOC content.
2. Laboratory Test Reports: For sealants, indicating compliance with requirements for low-emitting materials.

PART 2 - PRODUCTS

2.1 ROUND SLEEVES

A. Steel Wall Sleeves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Advance Products & Systems, LLC
b. CCI Piping Systems
c. Flexicraft Industries
d. GPT; a division of EnPRO Industries
e. Specified Technologies Inc.

2. General Characteristics: ASTM A53/A53M, Type E, Grade B, Schedule 40, zinc coated, plain ends and integral waterstop.

B. PVC Pipe Sleeves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. CCI Piping Systems
b. GPT; a division of EnPRO Industrie
c. Metraflex Company (The)

2. General Characteristics: ASTM D1785, Schedule 40.

C. PVC Molded Sleeves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. American Polywater Corporation
c. Arlington Industries, Inc.
d. Reliance Worldwide Corporation
e. Roxtec Inc.

2. General Characteristics: With nailing flange for attaching to wooden forms.

2.2 GROUT

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Specified Technologies Inc.
2. W. R. Meadows, Inc

B. General Characteristics: Nonshrink; recommended for interior and exterior sealing openings in non-fire-rated walls or floors.

1. Standard: ASTM C1107/C1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
2. Design Mix: 5000 psi, 28-day compressive strength.
3. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 INSTALLATION OF SLEEVES FOR NON-FIRE-RATED ELECTRICAL PENETRATIONS

A. Sleeves for Conduits Penetrating Above-Grade, Non-Fire-Rated, Concrete and Masonry-Unit Floors and Walls:

1. Interior Penetrations of Non-Fire-Rated Walls and Floors:

a. Seal space outside of sleeves with mortar or grout. Pack sealing material solidly between sleeve and wall or floor so no voids remain. Tool exposed surfaces smooth; protect material while curing.
b. Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Section 079200 "Joint Sealants."

2. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
3. Size pipe sleeves to provide 1/4 inch annular clear space between sleeve and raceway or cable, unless sleeve-seal system is to be installed or seismic criteria require different clearance.
4. Install sleeves for wall penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of walls. Cut sleeves to length for mounting flush with both surfaces of walls. Deburr after cutting.
5. Install sleeves for floor penetrations. Extend sleeves installed in floors 2 inch above finished floor level. Install sleeves during erection of floors.

B. Sleeves for Conduits Penetrating Non-Fire-Rated Wall Assemblies:

1. Use circular metal sleeves unless penetration arrangement requires rectangular sleeved opening.
2. Seal space outside of sleeves with approved joint compound for wall assemblies.

C. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve-seal systems. Size sleeves to allow for 1 inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

D. Underground, Exterior-Wall and Floor Penetrations:

1. Install steel pipe sleeves with integral waterstops. Size sleeves to allow for 1 inch annular clear space between raceway or cable and sleeve for installing sleeve-seal system. Install sleeve during construction of floor or wall.
2. Install steel pipe sleeves. Size sleeves to allow for 1 inch annular clear space between raceway or cable and sleeve for installing sleeve-seal system. Grout sleeve into wall or floor opening.

END OF SECTION 26 05 44

SECTION 26 05 53 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Labels.
2. Extruded insulating tubing.
3. Bands.
4. Tapes and stencils.
5. Tags.
6. Signs.
7. Cable ties.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" specifies additional requirements applicable to coordinating, scheduling, and sequencing of the Work specified in this Section.
2. Section 284600 "Fire Detection and Alarm" specifies fire detection and alarm devices referenced in this Section.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each type of label and sign to illustrate composition, size, colors, lettering style, mounting provisions, and graphic features of identification products.

C. Identification Schedule: For each piece of electrical equipment and electrical system components to be index of nomenclature for electrical equipment and system components used in identification signs and labels. Use same designations indicated on Drawings.

PART 2 - PRODUCTS

2.1 LABELS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. Listing Criteria: UL CCN PGDQ2 for components; including UL 969.

B. UL PGDQ2 - Vinyl Wraparound Labels: Preprinted, flexible labels laminated with clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Brady Corporation
b. Champion Americ
c. emedco
d. Grafoplast Wire Markers
e. HellermannTyton
f. LEM Products Inc.
g. Marking Services Inc.
h. Panduit Corp

C. UL PGDQ2 - Self-Adhesive Wraparound Labels: Preprinted, 3 mil thick, vinyl flexible label with acrylic pressure-sensitive adhesive.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. A'n D Cable Products
b. Brady Corporation
c. Brother International Corporation
d. emedco
e. Grafoplast Wire Markers
f. Ideal Industries, Inc.
g. LEM Products Inc
h. Marking Services Inc.
i. Panduit Corp

2. Self-Lamination: Clear; UV-, weather-, and chemical-resistant; self-laminating, with protective shield over legend. Size labels such that clear shield overlaps entire printed legend.
3. Marker for Labels:

a. Permanent, waterproof, black ink marker recommended by tag manufacturer.
b. Machine-printed, permanent, waterproof, black ink recommended by printer manufacturer.

D. UL PGDQ2 - Self-Adhesive Labels: Vinyl, thermal, transfer-printed, 3 mil thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. A'n D Cable Products
b. Brady Corporation
c. Brother International Corporation
d. emedco
e. Grafoplast Wire Markers
f. HellermannTyton
g. Ideal Industries, Inc.
h. LEM Products Inc
i. Marking Services Inc.
j. Panduit Corp

2. Minimum Nominal Size:

a. 1-1/2 by 6 inch for raceway and conductors.
b. 3-1/2 by 5 inch for equipment.
c. As required by authorities having jurisdiction.

2.2 EXTRUDED INSULATING TUBING

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN YDPU2 for components; including UL 224.

PART 3 - EXECUTION

3.1 SELECTION OF IDENTIFICATION PRODUCTS FOR COMMUNICATIONS, CONTROL, AUXILIARY, AND LIFE SAFETY SYSTEMS

A. Comply with Section 270528 "Pathways for Communications Systems" and Section 271100 "Communications Equipment Room Fittings."

3.2 INSTALLATION

A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.

B. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Retain paint system applicable for surface material and location (exterior or interior).

C. Fasteners for Labels and Signs: Self-tapping, stainless steel screws or stainless steel machine screws with nuts and flat and lock washers.

D. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.

E. Install identifying devices before installing acoustical ceilings and similar concealment.

F. Verify identity of item before installing identification products.

G. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.

H. Apply identification devices to surfaces that require finish after completing finish work.

I. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.

J. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from floor.

K. Vinyl Wraparound Labels:

1. Secure tight to surface of raceway or cable at location with high visibility and accessibility.
2. Attach labels that are not self-adhesive type with clear vinyl tape, with adhesive appropriate to location and substrate.

L. Self-Adhesive Wraparound Labels: Secure tight to surface at location with high visibility and accessibility.

M. Self-Adhesive Vinyl Tape: Secure tight to surface at location with high visibility and accessibility.

1. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for minimum distance of 6 inch where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding.

END OF SECTION 26 05 53

SECTION 26 09 23 - LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Business occupancy and vacancy sensors.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" specifies additional coordination, scheduling, sequencing, submittal, and installation requirements applicable to the Work for electrical, communications, and electronic safety and security systems on the Project, including wiring methods.
2. Section 260526 "Grounding and Bonding for Electrical Systems" specifies grounding and bonding of lighting control devices referenced by this Section.
3. Section 260529 "Hangers and Supports for Electrical Systems" specifies hangers and supports referenced by this Section.
4. Section 260553 "Identification for Electrical Systems" specifies electrical equipment labels and warning signs referenced by this Section.
5. Section 262726 "Wiring Devices"

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Product Listing: Include copy of unexpired approval letter, on letterhead of qualified electrical testing agency, certifying product's compliance with specified listing criteria.

    a. If listed manufacturer differs from selling manufacturer, indicate relationship between entities on submittal. Clearly indicate which entity warrants product performance and fitness for purpose.
    b. Listing criteria identified in approval letter must match specified listing criteria. UL label indicating approval of equipment's enclosure is not considered approval of equipment for intended application.
    c. Product identification in approval letter must match product branding and model numbers in submittal. Approval letters for discontinued or superseded products are unacceptable for submitted product.

2. Include manufacturer's sample extended warranty language.

B. Shop Drawings: Prepare and submit the following:

1. Show installation details for the following:

a. Occupancy sensors.
b. Vacancy sensors.

2. Interconnection diagrams showing field-installed wiring.
3. Diagrams for power, signal, and control wiring.

C. Sustainable Design Submittals:

1. ASHRAE/IES 90.1 LPD Compliance Documentation: Prepare plans and calculations demonstrating that as-constructed lighting power density complies with mandatory provisions of ASHRAE/IES 90.1 and that as-constructed lighting, including daylighting and controls, improves on baseline energy performance. If included with Project, indicate locations of energy meters for lighting loads.
2. Lighting Control Documentation: Floor plans indicating the following information:

a. As-installed locations of switches and dimmers.
b. Lighting zones and control strategy for each switch or dimmer, including unoccupied time-delay setting for shut-off and override time-delay setting for shut-off.
c. Multilevel or dimming range capability for each switch or dimmer.
d. Which switches or dimmers are operated by occupancy sensors, vacancy sensors, daylighting sensors, or time clocks.

D. Field quality-control reports.

1.3 INFORMATIONAL SUBMITTALS

A. Manufacturer's published instructions.

B. Field Reports:

1. Manufacturer's field reports for field quality-control support.
2. Field reports for software and firmware upgrades.

1.4 CLOSEOUT SUBMITTALS

A. Warranty documentation.

B. Software and firmware service agreement.

1.5 WARRANTY

A. Special Installer Extended Warranty: Installer warrants that installed lighting control devices perform in accordance with specified requirements and agrees to repair or replace components or products that fail to perform as specified within extended-warranty period. Warranty must convey to Owner upon acceptance of the Work.

1. Extended-Warranty Period: Two years from date of Substantial Completion; full coverage for labor, materials, and equipment.

B. Special Manufacturer Extended Warranty: Manufacturer warrants that lighting control devices perform in accordance with specified requirements and agrees to provide repair or replacement of components or products that fail to perform as specified within extended-warranty period. Warranty must convey to Owner upon acceptance of the Work.

1. Failures include, but are not limited to, the following:

a. Faulty operation of lighting control software.
b. Faulty operation of lighting control devices.

2. Initial Extended-Warranty Period: Five years from date of Substantial Completion; full, prorated coverage for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements:

1. Products or components listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Must comply with CCR Title 24.

2.2 BUSINESS OCCUPANCY AND VACANCY SENSORS

A. Passive-Infrared (PIR) Occupancy or Vacancy Sensor:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Cooper Lighting Solutions; Signify North America Corp.
b. Crestron Electronics, Inc.
c. Honeywell Security Group
d. Hubbell Control Solutions; brand of Hubbell Electrical Solutions; Hubbell Incorporated
e. Leviton Manufacturing Co., Inc.
f. Lithonia Lighting; Acuity Brands Lighting, Inc.
g. Lutron Electronics Co., Inc
h. Pass & Seymour; Legrand North America, LLC
i. WattStopper; Legrand North America, LLC

2. Standard Features:

a. Ceiling-mounted, solid-state indoor occupancy and vacancy sensors.
b. Integrated power pack.
c. Hardwired connection to switch.
d. Sensor Output: Sensor is powered from the power pack.
e. Power: Line voltage.
f. Power Pack: Dry contacts rated for 20 A driver or LED load at 120 and 277 V(ac), for 13 A tungsten at 120 V(ac), and for 1 hp at 120 V(ac). Sensor has 24 V(dc), 150 mA, Class 2 power source.
g. Mounting:

1) Sensor: Suitable for mounting in any position in a standard device box or outlet box.
2) Relay: Externally mounted through a 1/2 inch knockout in a standard electrical enclosure.
3) Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.

h. Indicator: Digital display, to show when motion is detected during testing and normal operation of sensor.
i. Bypass Switch: Override the "on" function in case of sensor failure.
j. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc; turn lights off when selected lighting level is present.
k. 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. inch.

1) Detection Coverage (Room, Ceiling Mounted): Detect occupancy anywhere in a circular area of 1000 sq. ft when mounted on a 96 inch high ceiling.
2) Detection Coverage (Corridor, Ceiling Mounted): Detect occupancy within 90 ft when mounted on a 10 ft high ceiling.

3. Operation:

a. Occupancy Sensor: Unless otherwise indicated, turn lights on when coverage area is occupied, and turn them off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
b. Vacancy Sensor: Unless otherwise indicated, lights are manually turned on and sensor turns lights off when the room is unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
c. Combination Sensor: Unless otherwise indicated, sensor must be programmed to turn lights on when coverage area is occupied and turn them off when unoccupied, or to turn off lights that have been manually turned on; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.

PART 3 - EXECUTION

3.1 INSTALLATION OF LIGHTING CONTROL DEVICES

A. Comply with manufacturer's published instructions.

B. Reference Standards for Installation: Unless more stringent installation requirements are specified in the Contract Documents or manufacturer's published instructions, comply with the following:

1. Electrical Construction: ICC IBC, ICC IFC, NFPA 1, NFPA 70, and NECA NEIS 1.
2. Electrical Maintenance: NFPA 70B.
3. Electrical Safety: NFPA 70E.
4. Grounding and Bonding: NECA NEIS 331 and Article 250 of NFPA 70.
5. Communications Work: BICSI N1.
6. Life Safety and Means of Egress Work: NFPA 101.
7. Work in Basements and Other Developed Subterranean Spaces: NFPA 520.
8. Consult Architect for resolution of conflicting requirements.

C. Special Installation Techniques:

1. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, smoke detectors, fire-suppression systems, and partition assemblies.
2. 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 instructions.
3. Installation of Industrial Control Switches: Mount electrically held lighting contactors with elastomeric isolator pads to eliminate structure-borne vibration unless contactors are installed in an enclosure with factory-installed vibration isolators.
4. Installation of Wiring:

a. Conduit: Minimum conduit size is 3/4 inch.
b. Wiring within Enclosures: Separate power-limited and nonpower-limited conductors in accordance with conductor manufacturer's published instructions.
c. Size conductors in accordance with lighting control device manufacturer's published instructions unless otherwise indicated.
d. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, device, and outlet boxes; terminal cabinets; and equipment enclosures.

D. Interfaces with Other Work:

1. Identification: Provide labels for lighting control devices and associated electrical equipment.

a. Identify field-installed conductors, interconnecting wiring, and components.
b. Label each enclosure with engraved metal or laminated-plastic nameplate.
c. Identify controlled circuits in lighting contactors.

d. Identify circuits or luminaires controlled by photoelectric and occupancy sensors at each sensor.
e. Label time switches and contactors with a unique designation.

3.2 FIELD QUALITY CONTROL

A. Administrant for Electrical Power Tests and Inspections:

1. Contractor will engage qualified electrical testing and inspecting agency to administer and perform tests and inspections.
2. Engage qualified electrical testing and inspecting agency to administer and perform tests and inspections.
3. Engage factory-authorized service representative to administer and perform tests and inspections on components, assemblies, and equipment installations, including connections.
4. Administer and perform tests and inspections.

B. Administrant for Lighting Tests and Inspections:

1. Contractor will engage qualified lighting testing and inspecting agency to administer and perform tests and inspections.
2. Engage qualified lighting testing and inspecting agency to administer and perform tests and inspections.
3. Engage factory-authorized service representative to administer and perform tests and inspections on components, assemblies, and equipment installations, including connections.
4. Administer and perform tests and inspections.

C. Field tests must be witnessed by authorities having jurisdiction.

D. Tests and Inspections:

1. Operational Test: After installing time switches and sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Nonconforming Work:

1. Lighting control devices will be considered defective if they do not pass tests and inspections.
2. Remove and replace defective units and retest.

F. Field Quality-Control Reports: Collect, assemble, and submit test and inspection reports.

G. Manufacturer Services: Engage factory-authorized service representative to support field tests and inspections.

1. Manufacturer's Field Reports for Field Quality-Control Support: Prepare and submit

report after each visit by factory-authorized service representative, documenting activities performed at the Project site.

END OF SECTION 26 09 23

SECTION 26 27 26 - WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General-use switches, dimmer switches, and fan-speed controller switches.
2. General-grade duplex straight-blade receptacles.
3. Receptacles with arc-fault and ground-fault protective devices.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" specifies additional coordination, scheduling, sequencing, submittal, and installation requirements applicable to the Work for electrical, communications, and electronic safety and security systems on the Project, including wiring methods.
2. Section 260526 "Grounding and Bonding for Electrical Systems" specifies grounding and bonding referenced by this Section.
3. Section 260533.16 "Boxes and Covers for Electrical Systems" specifies covers and cover plates referenced by this Section.
4. Section 260553 "Identification for Electrical Systems" specifies electrical equipment labels and warning signs referenced by this Section.
5. Section 260923 "Lighting Control Devices" for occupancy sensors, timers, control-voltage switches, and control-voltage dimmers.

1.2 DEFINITIONS

A. AFCI: Arc-Fault Circuit Interrupter.

B. Commercial/Industrial-Use Cord Reel: A cord reel subject to severe use in factories, commercial garages, construction sites, and similar locations requiring a harder service-type cord.

C. GFCI: Ground-Fault Circuit Interrupter.

D. UL 1472 Type I Dimmer: Dimmer in which air-gap switch is used to energize preset lighting levels.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Product Listing: Include copy of unexpired approval letter, on letterhead of qualified electrical testing agency, certifying product's compliance with specified listing criteria.

a. If listed manufacturer differs from selling manufacturer, indicate relationship between entities on submittal. Clearly indicate which entity warrants product performance and fitness for purpose.
b. Listing criteria identified in approval letter must match specified listing criteria. UL label indicating approval of equipment's enclosure is not considered approval of equipment for intended application.
c. Product identification in approval letter must match product branding and model numbers in submittal. Approval letters for discontinued or superseded products are not acceptable for submitted product.

2. Include manufacturer's sample extended warranty language.

B. Shop Drawings:

1. Wiring diagrams for duplex straight-blade receptacles with integral switching means.

C. Field quality-control reports.

1.4 INFORMATIONAL SUBMITTALS

A. Manufacturer's published instructions.

B. Field Reports:

1. Manufacturer's field reports for field quality-control support.

1.5 CLOSEOUT SUBMITTALS

A. Warranty documentation.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Extra stock material.

B. Special tools.

1.7 QUALIFICATIONS

A. Electrical Power Testing (EPT) Technician III: Possessing active NICET EPT Level III certification. Able to manage switching procedures, conduct tests of complex equipment, analyze test and equipment data, plan a job, and lead a team. Has experience performing NFPA 70B, IEEE, and NETA electrical tests.

B. Electrical Power Testing (EPT) Technician IV: Possessing active NICET EPT Level IV certification. Able to conduct tests of complex metering and relay systems; evaluate tests, test

equipment, test results, and power system performance; recommend actions to maintain or improve system performance; and lead multi-team projects.

C. Electrical Power Testing and Inspecting Agency: Entities possessing active credentials from a qualified electrical testing laboratory recognized by authorities having jurisdiction.

1. On-site electrical testing supervisors must possess active NICET EPT Technician III certification.

1.8 WARRANTY FOR DEVICES

A. Special Installer Extended Warranty: Installer warrants that installed devices perform in accordance with specified requirements and agrees to repair or replace products that fail to perform as specified within extended-warranty period. Warranty must convey to Owner upon acceptance of the Work.

1. Extended-Warranty Period: Two years from date of Substantial Completion; full coverage for labor, materials, and equipment.

B. Special Manufacturer Extended Warranty: Manufacturer warrants that devices perform in accordance with specified requirements and agrees to provide repair or replacement of devices that fail to perform as specified within extended warranty period.

1. Initial Extended Warranty Period: Five years from date of Substantial Completion; full coverage for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Products or components listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2.2 GENERAL-USE SWITCHES, DIMMER SWITCHES, AND FAN-SPEED CONTROLLER SWITCHES

A. Toggle Switch:

1. Manufacturers:

a. Eaton
b. Hubbell Incorporated

2. Source Limitations: Obtain products from single manufacturer.
3. Listing Criteria: UL CCN WMUZ and UL 20.

4. Standard Features:

   a. Device Color: Must match existing device colors throughout facility.
   b. Configuration:

      1) Extra-heavy-duty, 120-277 V, 20 A, single pole.

5. Accessories:

   a. Cover Plate: 0.060 inch (1.5 mm) thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device; from same manufacturer as wiring device.
   b. Securing Screws for Cover Plate: Metal with head color matching wallplate finish.

2.3 GENERAL-GRADE DUPLEX STRAIGHT-BLADE RECEPTACLES

A. Duplex Straight-Blade Receptacle:

1. Manufacturers:

   a. Eaton
   b. Hubbell Incorporated

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

   a. Receptacles for Plugs and Attachment Plugs: UL CCN RTRT and UL 498.
   b. Surge Protective Devices: UL 1449, Type 3.

3. Standard Features:

   a. Device Color: Must match existing device colors throughout facility.
      Configuration:
      1) Heavy-duty, NEMA 5-20R.

4. Other Available Features Required by the Project:

   a. Has factory-terminated connectors on wiring device pigtails for quick installation.

5. Accessories:

   a. Cover Plate: 0.060 inch (1.5 mm) thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device; from same manufacturer as wiring device.
   b. Securing Screws for Cover Plate: Metal with head color matching wallplate finish.

2.4 RECEPTACLES WITH ARC-FAULT AND GROUND-FAULT PROTECTIVE DEVICES

A. General-Grade, Weather-Resistant, Tamper-Resistant Duplex Straight-Blade Receptacle with GFCI Device:

1. Manufacturers:

a. Eaton
b. Hubbell Incorporated

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Receptacle GFCIs: UL CCN KCXS, UL 498, and UL 943.

3. Standard Features:

a. Device Color: Must match existing device colors throughout facility.
b. Configuration: Heavy-duty, NEMA 5-20R.

4. Other Available Features Required by the Project:

a. Has factory-terminated connectors on wiring device pigtails for quick installation.

5. Accessories:

a. Cover Plate: 0.060 inch (1.5 mm) thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device; from same manufacturer as wiring device.
b. Securing Screws for Cover Plate: Metal with head color matching wallplate finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Receptacles:

1. Verify that receptacles to be procured and installed for Owner-furnished equipment are compatible with mating attachment plugs on equipment.

3.2 INSTALLATION OF SWITCHES

A. Comply with manufacturer's published instructions.

B. Reference Standards for Installation: Unless more stringent installation requirements are specified in the Contract Documents or manufacturer's published instructions, comply with the following:

1. Electrical Construction: ICC IBC, ICC IFC, NFPA 1, NFPA 70, and NECA NEIS 1.
2. Electrical Safety: NFPA 70E.
3. Life Safety and Means of Egress Work: NFPA 101.
4. Work in Basements and Other Developed Subterranean Spaces: NFPA 520.
5. Wiring Devices: NECA NEIS 130.
6. Mounting Heights: NECA NEIS 1.
7. Consult Architect for resolution of conflicting requirements.

C. Interfaces with Other Work:

1. Identification:

a. Identify cover or cover plate for device with panelboard identification and circuit number.
b. Mark cover or cover plate using hot, stamped, or engraved machine printing with black-filled lettering, and provide durable wire markers or tags inside device box or outlet box.
c. Provide warning signs and arc-flash hazard warning labels for electrical equipment.

3.3 INSTALLATION OF STRAIGHT-BLADE RECEPTACLES

A. Comply with manufacturer's published instructions.

B. Reference Standards for Installation: Unless more stringent installation requirements are specified in the Contract Documents or manufacturer's published instructions, comply with the following:

1. Electrical Construction: ICC IBC, ICC IFC, NFPA 1, NFPA 70, and NECA NEIS 1.
2. Electrical Safety: NFPA 70E.
3. Grounding and Bonding: NECA NEIS 331 and Article 250 of NFPA 70.
4. Work in Basements and Other Developed Subterranean Spaces: NFPA 520.
5. Installing and Maintaining Wiring Devices: NECA NEIS 130.
6. Mounting Heights: Unless otherwise indicated in the Contract Documents, comply with mounting heights recommended in NECA NEIS 1.
7. Receptacle Orientation: Unless otherwise indicated in the Contract Documents, orient receptacle to match configuration diagram in NEMA WD 6.

8. Consult Architect for resolution of conflicting requirements.

C. Interfaces with Other Work:

1. Identification: Provide labels for receptacles and associated electrical equipment.

a. Identify field-installed conductors, interconnecting wiring, and components.

b. Label each enclosure with engraved metal or laminated-plastic nameplate.

1) Identify cover or cover plate for device with panelboard identification and circuit number.
2) Mark cover or cover plate using hot, stamped, or engraved machine printing with black-filled lettering, and provide durable wire markers or tags inside device box or outlet box.

c. Provide warning signs and arc-flash hazard warning labels for electrical equipment.

2. Do not install Type 3 SPD, including surge-protected relocatable taps and power strips, on branch circuit downstream of GFCI device.
3. Coordinate installation of new products with existing conditions.

3.4 FIELD QUALITY CONTROL OF SWITCHES

A. Administrant for Electrical Power Tests and Inspections:

1. Contractor will engage qualified medium-voltage electrical testing and inspecting agency to administer and perform tests and inspections.
2. Engage qualified medium-voltage electrical testing and inspecting agency to administer and perform tests and inspections.
3. Engage factory-authorized service representative to administer and perform tests and inspections on components, assemblies, and equipment installations, including connections.
4. Administer and perform tests and inspections with assistance of factory-authorized service representative.

B. Field tests and inspections must be witnessed by authorities having jurisdiction.

C. Tests and Inspections:

1. Perform tests and inspections in accordance with manufacturers' published instructions.

D. Nonconforming Work:

1. Unit will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective units and retest.

E. Field Quality-Control Reports: Collect, assemble, and submit test and inspection reports.

F. Manufacturer Services: Engage factory-authorized service representative to support field tests and inspections.

1. Manufacturer's Field Reports for Field Quality-Control Support: Prepare and submit report after each visit by factory-authorized service representative, documenting activities performed at the Project site.

3.5 FIELD QUALITY CONTROL OF STRAIGHT-BLADE RECEPTACLES

A. Administrant for Electrical Power Tests and Inspections:

1. Contractor will engage qualified electrical testing and inspecting agency to administer and perform tests and inspections.
2. Engage qualified electrical testing and inspecting agency to administer and perform tests and inspections.
3. Engage factory-authorized service representative to administer and perform tests and inspections on components, assemblies, and equipment installations, including connections.
4. Administer and perform tests and inspections with assistance of factory-authorized service representative.

B. Field tests and inspections must be witnessed by authorities having jurisdiction.

C. Tests and Inspections:

1. Insert and remove test plug to verify that device is securely mounted.
2. Verify polarity of hot and neutral pins.
3. Measure line voltage.
4. Measure percent voltage drop.
5. Measure grounding circuit continuity; impedance must be not greater than 2 ohms.

D. Nonconforming Work:

1. Device will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective units and retest.

E. Field Quality-Control Reports: Collect, assemble, and submit test and inspection reports.

F. Manufacturer Services: Engage factory-authorized service representative to support field tests and inspections.

1. Manufacturer's Field Reports for Field Quality-Control Support: Prepare and submit report after each visit by factory-authorized service representative, documenting activities performed at the Project site.

END OF SECTION 26 27 26

SECTION 26 50 00 - LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Luminaires.
2. Luminaire fittings.

B. Related Requirements:

1. Section 018116 "Facility Environmental Requirements" specifies basis-of-design environmental conditions and performance criteria that are applicable to product selection and installation of the Work on the Project.
2. Section 018123 "Facility Seismic and Wind Criteria" specifies basis-of-design seismic and wind criteria for nonstructural components on the Project.
3. Section 260010 "Supplemental Requirements for Electrical" specifies additional requirements applicable to coordinating, scheduling, and sequencing of the Work specified in this Section.
4. Section 260519 "Low-Voltage Electrical Power Conductors and Cables" specifies wiring connections installed by this Section.
5. Section 260529 "Hangers and Supports for Electrical Systems" specifies channel and angle supports installed by this Section.
6. Section 260553 "Identification for Electrical Systems" specifies electrical equipment labels and warning signs installed by this Section.
7. Section 260923 "Lighting Control Devices" specifies automatic control of lighting, including time switches, photoelectric relays, occupancy sensors, and multipole lighting relays and contactors installed by this Section.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Luminaires: Include the following additional information:

a. Product Listing: Include copy of unexpired approval letter, on letterhead of qualified electrical testing agency, certifying product's compliance with specified listing criteria.

1) If listed manufacturer differs from selling manufacturer, indicate relationship between entities on submittal. Clearly indicate which entity warrants product performance and fitness for purpose.
2) Listing criteria identified in approval letter must match specified listing criteria. Approval of only equipment's enclosure is not considered approval

of equipment for intended application.

3) Product identification in approval letter must match product branding and model numbers in submittal. Approval letters for similar products are not acceptable.

b. Product Certificates: Include product certificates stating compliance with standards listed below, signed by manufacturer or fabricator.

1) Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with current accreditation under National Voluntary Laboratory Accreditation Program (NVLAP) for Energy Efficient Lighting Products.
2) Testing Agency Certified Data: For luminaires indicated on Lighting Fixture Schedule on the Drawings, photometric data certified by qualified independent testing laboratory. Photometric data for remaining luminaires must be certified by manufacturer.

c. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
d. Include operating characteristics, electrical characteristics, and furnished accessories.
e. Include schedule of submitted lighting products. Arrange schedule and accompanying product data in order by luminaire and lamp designations indicated on the Drawings.
f. Include battery and charger data for emergency lighting units.
g. Include life, output (lumens, CCT, and CRI), and energy-efficiency data.
h. Include photometric data and adjustment factors obtained from qualified laboratory tests.
i. Include manufacturer's sample warranty language.

2. Luminaire Fittings: Include the following additional information:

a. Product Listing: Include copy of unexpired approval letter, on letterhead of qualified electrical testing agency, certifying product's compliance with specified listing criteria.

1) If listed manufacturer differs from selling manufacturer, indicate relationship between entities on submittal. Clearly indicate which entity warrants product performance and fitness for purpose.
2) Listing criteria identified in approval letter must match specified listing criteria. Approval of only equipment's enclosure is not considered approval of equipment for intended application.
3) Product identification in approval letter must match product branding and model numbers in submittal. Approval letters for similar products are not acceptable.

b. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
c. Include operating characteristics, electrical characteristics, and furnished accessories.

d. Include schedule of submitted lighting products. Arrange schedule and accompanying product data in order by luminaire and lamp designations indicated on the Drawings.
e. Include manufacturer's sample warranty language.

B. Shop Drawings: Prepare and submit the following:

1. Drawings, Diagrams, and Supporting Documents for Custom Luminaires:

a. Include plans, elevations, sections, and mounting and attachment details.
b. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
c. Include diagrams for power, signal, and control wiring.

C. Field quality-control reports.

1.3 INFORMATIONAL SUBMITTALS

A. Manufacturers' published instructions.

B. Field Reports:

1. Manufacturer's field reports for field quality-control support.
2. Manufacturer's field reports for system startup support.

1.4 CLOSEOUT SUBMITTALS

A. Warranty documentation.

1.5 WARRANTY FOR LUMINAIRES

A. Special Installer Extended Warranty: Installer warrants that fabricated and installed luminaires perform in accordance with specified requirements and agrees to repair or replace products that fail to perform as specified within extended-warranty period. Warranty must convey to Owner upon acceptance of the Work.

1. Extended-Warranty Period: Two years from date of Substantial Completion; full coverage for labor, materials, and equipment.

B. Special Manufacturer Extended Warranty: Manufacturer warrants that luminaires perform in accordance with specified requirements and agrees to provide repair or replacement of products that fail to perform as specified within extended-warranty period.

1. Extended-Warranty Period: Five years from date of Substantial Completion; full coverage for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Products or components listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2.2 LUMINAIRES

A. Surface-Mounted Luminaire:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following manufacturers listed on the drawings: :
2. Listing Criteria:

a. Incandescent Luminaires: UL CCN IEZR; including UL 1598.
b. LED Luminaires: UL CCN IFAM; including UL 1598.
c. Outdoor Canopy Luminaires: UL CCN IFAW; including UL 1598.
d. Marked in accordance with UL CCN HYXT, including UL 1598, for compatible power supply, installation location, and environmental conditions.

3. Standard Features:

a. Openings: Doors, frames, and access panels must operate smoothly, not leak light under operating conditions, and permit relamping without use of tools or parts falling from enclosure.
b. Materials:

1) Enclosure: ASTM B209/B209M extruded-aluminum housing and heat sink; free of sharp edges and burrs.
2) Lenses, Diffusers, and Globes:

a) Fixed lens.
b) Medium light distribution.
c) Clear, heat- and UV-stabilized virgin acrylic plastic.
d) Lens Thickness: Not less than 0.125 inch unless otherwise indicated.

3) Visible variations in metal finishes[outside range of approved Samples] are unacceptable in adjoining components.

c. LED Luminaires (UL CCN IFAM):

1) Output Intensity: Refer to drawings.
2) Efficacy: Not less than 75 lm/W.
3) Rated Life: 35 000 hours to L70.
4) CCT: Refer to drawings.

4. Installation Markings:

   a. All Luminaires (UL CCN HYXT):

      1) "DRY LOCATIONS ONLY."
      2) "SUITABLE FOR DAMP LOCATIONS."
      3) "SUITABLE FOR WET LOCATIONS."
      4) "SUITABLE FOR MOUNTING WITHIN 1.2 M (4 FT) OF THE GROUND" or "SUITABLE FOR FLOOR PROXIMITY INSTALLATION."
      5) "SUITABLE FOR GROUND-MOUNTED RECESSED."
      6) "COVERED CEILING MOUNT ONLY."
      7) "WALL MOUNT ONLY"
      8) "FOR CEILING MOUNTING ONLY."
      9) Marked with mounting orientation, such as "THIS END UP."
      10) "SUITABLE FOR AIR-HANDLING USE."
      11) "VENTILATING OR COOLING AIR ONLY."
      12) "ONLY FOR USE IN CEILING PLENUM OF NONCOMBUSTIBLE CONSTRUCTION OR WITH AIR-HANDLING PARTS THAT COVER VENT OPENINGS."
      13) "INSTALL ONLY IN ENVIRONMENTAL AIR-HANDLING SPACES WHERE A COMPLETE METAL ENCLOSED WIRING SYSTEM IS PROVIDED."
      14) "MIN **75°C** SUPPLY CONDUCTORS."
      15) "NOT FOR USE IN DWELLING."
      16) "SUITABLE FOR USE AS RACEWAY."
      17) "60 Hz" or "AC ONLY."
      18) Marked to identify voltage supply or type of branch circuit or both.

   b. LED Luminaires (UL CCN IFAM):

      1) "PUSH CONDUCTORS INTO JUNCTION BOX."
      2) "WALL MOUNT ONLY."
      3) "NONCOMBUSTIBLE SURFACE ONLY."
      4) "SUITABLE FOR UNDER-CABINET MOUNT."
      5) "SUITABLE FOR CONTINUOUS ROW MOUNTING."
      6) "THIS LUMINAIRE MUST BE MOUNTED OR SUPPORTED INDEPENDENTLY OF AN OUTLET BOX."

B. Recessed Luminaire:

   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following manufacturers listed on the drawings:
   2. Listing Criteria:

      a. LED Luminaires: UL CCN IFAO; including UL 1598**.**
      b. Marked in accordance with UL CCN HYXT, including UL 1598, for compatible power supply, installation location, and environmental conditions.

3. Standard Features:

    a. Ceiling Compatibility: NEMA LE 4.
    b. Openings: Doors, frames, and access panels must operate smoothly, not leak light under operating conditions, and permit relamping without use of tools or parts falling from enclosure.
    c. Nominal Operating Voltage: Universal.
    d. Materials:

        1) Enclosure: ASTM B209/B209M extruded-aluminum housing and heat sink; free of sharp edges and burrs.
        2) Lenses, Diffusers, and Globes:

            a) Fixed lens.
            b) Medium light distribution.
            c) Clear, heat- and UV-stabilized virgin acrylic plastic.
            d) Lens Thickness: Not less than 0.125 inch unless otherwise indicated.

    e. LED Luminaires (UL CCN IFAO):

        1) Output Intensity: Refer to drawings.
        2) Efficacy: Not less than 75 lm/W.
        3) Rated Life: 35 000 hours to L70.
        4) CCT: Refer to drawings.

4. Installation Markings:

    a. All Luminaires (UL CCN HYXT):

        1) "DRY LOCATIONS ONLY."
        2) "SUITABLE FOR DAMP LOCATIONS."
        3) "SUITABLE FOR WET LOCATIONS."
        4) "SUITABLE FOR MOUNTING WITHIN 1.2 M (4 FT) OF THE GROUND" or "SUITABLE FOR FLOOR PROXIMITY INSTALLATION."
        5) "SUITABLE FOR GROUND-MOUNTED RECESSED."
        6) "LIMIT RANGE OF ADJUSTMENT TO <Insert instruction>."
        7) "COVERED CEILING MOUNT ONLY."
        8) "WALL MOUNT ONLY"
        9) "FOR CEILING MOUNTING ONLY."
        10) Marked with mounting orientation, such as "THIS END UP."
        11) "SUITABLE FOR AIR-HANDLING USE."
        12) "VENTILATING OR COOLING AIR ONLY."
        13) "ONLY FOR USE IN CEILING PLENUM OF NONCOMBUSTIBLE CONSTRUCTION OR WITH AIR-HANDLING PARTS THAT COVER VENT OPENINGS."
        14) "INSTALL ONLY IN ENVIRONMENTAL AIR-HANDLING SPACES WHERE A COMPLETE METAL ENCLOSED WIRING SYSTEM IS PROVIDED."

15) "MIN **75°C**] SUPPLY CONDUCTORS."
16) "NOT FOR USE IN DWELLING."
17) "SUITABLE FOR USE AS RACEWAY."
18) "60 Hz" or "AC ONLY."
19) Marked to identify voltage supply or type of branch circuit, or both.

b. LED Luminaires (UL CCN IFAO):

1) "TYPE IC LUMINAIRE."
2) "TYPE NON-IC LUMINAIRE."
3) "INHERENTLY PROTECTED LUMINAIRE."
4) "INSTALL IN BUILDINGS OF FIRE-RESISTANT CONSTRUCTION."
5) "FOR USE IN CONCRETE ONLY."
6) "SUITABLE FOR USE IN POURED CONCRETE."
7) "SUITABLE FOR SUSPENDED CEILING."
8) "SUITABLE FOR GROUND-MOUNTED RECESSED ONLY."
9) "SUITABLE FOR GROUND-MOUNTED RECESSED."
10) "BLINKING LIGHT OF THIS THERMALLY PROTECTED LUMINAIRE MAY INDICATE OVERHEATING."
11) "ACCESS ABOVE CEILING REQUIRED."
12) "ACCESS BEHIND WALL REQUIRED."
13) "FOR USE IN ONE- AND TWO-FAMILY DWELLINGS ONLY."
14) "FOR USE IN NON-FIRE-RATED INSTALLATIONS."
15) Provide correlating markings identifying matching housing, trim, rough-in section, and finishing section.
16) "Chicago Electrical Code" or "CCEA."

C. UL FWBO - Exit Fixture:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following manufacturers listed on the drawings:
2. Listing Criteria:

a. Exit Fixtures: UL CCN FWBO; including UL 924, NFPA 101, and ICC IBC.
b. Marked in accordance with UL CCN HYXT, including UL 1598, for compatible power supply, installation location, and environmental conditions.

3. Standard Features:

a. Nominal Operating Voltage: Universal.
b. Light Source: LED; 50,000 hours minimum rated life.
c. Legend Color: Red.
d. Internal emergency power unit.
e. Battery Type: Ni-Cd.
f. Master/Remote Sign Configurations:

1) Master Unit: Comply with requirements above for self-powered exit signs, and provide additional capacity in LED power supply for power connection to remote unit.

2) Remote Unit: Comply with requirements above for self-powered exit signs, except omit power supply, battery, and test features. Arrange to receive full power requirements from master unit. Connect for testing concurrently with master unit as a unified system.

PART 3 - EXECUTION

3.1 INSTALLATION OF LIGHTING

A. Comply with manufacturer's published instructions.

B. Reference Standards for Installation: Unless more stringent installation requirements are specified in Contract Documents or manufacturers' published instructions, comply with the following:

1. Electrical Construction: ICC IBC, ICC IFC, NFPA 1, NFPA 70, and NECA NEIS 1.
2. Grounding and Bonding: NECA NEIS 331 and Article 250 of NFPA 70.
3. Work in Confined Spaces: NFPA 350.
4. Work in Basements and Other Developed Subterranean Spaces: NFPA 520.
5. Installation of Indoor Lighting Systems: NECA NEIS 500.
6. Installation of Exterior Lighting Systems: NECA NEIS 501.
7. Installation of Industrial Lighting Systems: NECA NEIS 502.
8. Installation of Luminaires, Lampholders, and Lamps: Article 410 of NFPA 70.
9. Installation of Extra-Low-Voltage Lighting: Article 411 of NFPA 70.
10. Installation of Lighting for Sensitive Electronic Equipment: Article 647 of NFPA 70.
11. Installation of Emergency Lighting and Exit Signs: ICC IBC, NFPA 101, and Parts IV and V in Article 700 of NFPA 70.
12. Consult Architect for resolution of conflicting requirements.

C. Special Installation Techniques:

1. Install luminaires level, plumb, and square with finished floor or grade unless otherwise indicated.
2. Install luminaires at height and aiming angle as indicated on the Drawings.
3. Coordinate layout and installation of luminaires with other construction.
4. Adjust luminaires that require field adjustment or aiming. Include adjustment of photoelectric device to prevent false operation of relay by artificial light sources, favoring a north orientation.
5. Exterior Bollard Luminaires:

a. Align units for optimum directional alignment of light distribution.
b. Install on concrete base with top 4 inch above finished grade or surface at luminaire location. Cast conduit into base, and shape base to match shape of bollard base. Finish by troweling and rubbing smooth. Concrete materials, installation, and finishing are specified in Section 033000 "Cast-in-Place Concrete."

6. Exterior In-Ground Luminaires:

    a. Install on concrete base with top 4 inch above finished grade or surface at luminaire location. Cast conduit into base, and finish by troweling and rubbing smooth. Concrete materials, installation, and finishing are specified in Section 033000 "Cast-in-Place Concrete."

7. Exterior Corrosion Prevention:

    a. Do not use aluminum in contact with earth or concrete. When in direct contact with dissimilar metals, protect aluminum with insulating fittings or treatment.
    b. When embedding steel conduits in concrete, wrap conduit with 10 mil thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

8. Flush-Mounted Luminaire Support:

    a. Secured to outlet box.
    b. Attached to ceiling structural members at four points equally spaced around circumference of luminaire.
    c. Trim ring flush with finished surface.

9. Ceiling-Grid-Mounted Luminaire Support:

    a. Install ceiling support system rods or wires, independent of the ceiling suspension devices, for each luminaire. Locate not more than 6 inch from luminaire corners.
    b. Support Clips: Fasten to luminaires and to ceiling grid members at or near each luminaire corner with clips that are UL listed for application.
    c. Luminaires of Sizes Smaller than Ceiling Grid: Install as indicated on reflected ceiling plans or center in acoustical panel, and support luminaires independently with no fewer than two 3/4 inch metal channels spanning and secured to ceiling tees.
    d. Seismic Restraint: Install at least one independent support rod or wire from structure to tab on luminaire. Wire or rod must have breaking strength for luminaire weight with safety factor of 3.0.

10. Remote Mounting of Ballasts or Drivers: Do not exceed distance between ballast or driver and luminaire recommended by ballast or driver manufacturer.
11. Emergency Power Units: Secure with approved fasteners in four or more locations, spaced near corners of unit.
12. Install wiring connections for luminaires.
13. Identification: Provide labels for luminaires and associated electrical equipment.

    a. Identify field-installed conductors, interconnecting wiring, and components.
    b. Provide warning signs.
    c. Label each enclosure with engraved metal or laminated-plastic nameplate.

D. Interfaces with Other Work:

1. Coordinate installation of new products for with existing conditions.

E. Systems Integration: Integrate lighting control devices and equipment with electrical power connections for operation of luminaires as specified.

3.2 FIELD QUALITY CONTROL OF LIGHTING

A. Administrant for Electrical Power Tests and Inspections:

1. Contractor will engage qualified electrical testing and inspecting agency to administer and perform tests and inspections.
2. Engage qualified electrical testing and inspecting agency to administer and perform tests and inspections.
3. Engage factory-authorized service representative to administer and perform tests and inspections on components, assemblies, and equipment installations, including connections.
4. Administer and perform tests and inspections with assistance of factory-authorized service representative.

B. Administrant for Field Tests and Inspections of Lighting Installations:

1. Contractor will engage qualified lighting testing and inspecting agency to administer and perform tests and inspections.
2. Engage qualified lighting testing and inspecting agency to administer and perform tests and inspections.
3. Engage factory-authorized service representative to administer and perform tests and inspections on components, assemblies, and equipment installations, including connections.
4. Administer and perform tests and inspections with assistance of factory-authorized service representative.

C. Field tests and inspections must be witnessed by authorities having jurisdiction.

D. Tests and Inspections:

1. Perform manufacturer's recommended tests and inspections.
2. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
3. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.
4. Verify operation of photoelectric controls.
5. Exterior Illumination Tests:

    a. Measure light intensities at night. Use photometers with calibration referenced to NIST standards.

E. Nonconforming Work:

1. Luminaire will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective units and retest.

F. Field Quality-Control Reports: Collect, assemble, and submit test and inspection reports.

G. Manufacturer Services: Engage factory-authorized service representative to support field tests and inspections.

1. Manufacturer's Field Reports for Field Quality-Control Support: Prepare and submit report after each visit by factory-authorized service representative, documenting activities performed at the Project's site.

3.3 SYSTEM STARTUP

A. Perform startup service.

1. Complete installation and startup checks in accordance with manufacturer's published instructions.

B. Manufacturer Services: Engage factory-authorized service representative to support system startup.

1. Manufacturer's Field Reports for System Startup Support: Prepare and submit report after each visit by factory-authorized service representative, documenting activities performed at the Project's site.

END OF SECTION 26 50 00

SECTION 27 05 28 - PATHWAYS FOR COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Type OFR and Type CR communications raceways and fittings.
2. Cable supports and positioning devices.

B. Related Requirements:

1. Section 260011 "Facility Performance Requirements for Electrical" for seismic-load, wind-load, acoustical, and other field conditions applicable to Work specified in this Section.
2. Section 078413 "Penetration Firestopping" specifies firestopping for communications pathways installed by this Section.
3. Section 260526 "Grounding and Bonding for Electrical Systems" specifies grounding and bonding conductors and connectors for communications pathways installed by this Section.
4. Section 260529 "Hangers and Supports for Electrical Systems" specifies hangers and supports for communications pathways installed by this Section.
5. Section 260533.13 "Conduits for Electrical Systems" specifies the following installed by this Section:

    a. Type EMT-A and Type EMT-SS duct raceways and elbows.
    b. Type EMT-S duct raceways and elbows.
    c. Type ENT duct raceways and fittings.
    d. Type HDPE and Type EPEC duct raceways and fittings.
    e. Type ERMC-A and Type ERMC-SS duct raceways, elbows, couplings, and nipples.
    f. Type ERMC-S duct raceways, elbows, couplings, and nipples.
    g. Type FMC-S and Type FMC-A duct raceways.
    h. Type FMT duct raceways.
    i. Type IMC duct raceways.
    j. Type LFMC duct raceways.
    k. Type LFNC duct raceways.
    l. Type PVC duct raceways and fittings.
    m. Type RTRC-AG duct raceways and fittings.
    n. Type RTRC-BG duct raceways and fittings.
    o. Fittings for conduit, tubing, and cable.
    p. Electrically conductive corrosion-resistant compounds for threaded conduit.
    q. Solvent cements.

6. Section 260533.16 "Boxes and Covers for Electrical Systems" specifies the following installed by this Section:

    a. Metallic outlet boxes, device boxes, rings, and covers.
    b. Nonmetallic outlet boxes, device boxes, rings, and covers.
    c. Junction boxes and pull boxes.
    d. Cover plates for device boxes.
    e. Hoods for outlet boxes.

7. Section 260533.23 "Surface Raceways for Electrical Systems" specifies the following installed by this Section:

    a. Surface metal raceways and fittings.
    b. Surface nonmetallic raceways.
    c. Strut-type channel raceways and fittings.
    d. Wireways and auxiliary gutters.

8. Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling" specifies sleeves and sleeve seals for communications pathways installed by this Section.
9. Section 260553 "Identification for Electrical Systems" specifies labels and warning signs for communications pathways installed by this Section.
10. Section 262716 "Electrical Cabinets and Enclosures" for communications enclosures installed by this Section.

1.2 ACTION SUBMITTALS

A. Product Data:

1. For each type of product.

    a. Product Listing: Include copy of unexpired approval letter, on letterhead of qualified electrical testing agency, certifying product's compliance with specified listing criteria.

        1) If listed manufacturer differs from selling manufacture, indicate relationship between entities on submittal. Clearly indicate which entity warrants product performance and fitness for purpose.
        2) Listing criteria identified in approval letter must match specified listing criteria. Approval of only equipment's enclosure is not considered approval of equipment for intended application.
        3) Product identification in approval letter must match product branding and model numbers in submittal. Approval letters for similar products are not acceptable.

1.3 INFORMATIONAL SUBMITTALS

A. Manufacturers' published instructions submittals.

PART 2 - PRODUCTS

2.1 TYPE OFR AND TYPE CR COMMUNICATIONS RACEWAYS AND FITTINGS

A. Description: This product group covers raceways and fittings for installation of conductive and nonconductive optical-fiber cable, communications cable, power-limited fire-alarm cable, signaling cable, and coaxial cable in accordance with NFPA 70.

B. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria:

a. Communications Cable Raceway: UL CCN QBAA; including UL 2024.

C. UL QBAA - Type CR-GP General-Purpose Communications Cable Raceway:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. CommScope, Inc
b. Dura-Line
c. Multilink Inc.
d. Ortronics, Inc.
e. Panduit Corp
f. Premier Conduit Inc.
g. Telect, Inc.
h. Vericom Global Solutions

2. Product Characteristics:

a. Texture: Smooth.
b. Splicing: Glue.

3. Required Product Options:

a. Colors:

1) For Communications: Coordinate with facilities manager for raceway colors per building.

D. UL QBAA - Type CR-P Plenum Communications Cable Raceway:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. America Fujikura Ltd. (AFL); Fujikura Ltd.

b. Atkore
c. Belden Canada ULC
d. Gravenhurst Plastics Ltd
e. Premier Conduit Inc.

2. Product Characteristics:

a. Meets UL 2024 test requirements for "PLENUM" marking.
b. Texture: Smooth.
c. Splicing: Glue.

3. Required Product Options:

a. Colors:

1) For Communications: Coordinate with facilities manager for raceway colors per building.

2.2 CABLE SUPPORTS AND POSITIONING DEVICES

A. Description: This category covers straps, hooks, and similar types of hardware for installation and use in communications cabling systems in accordance with NFPA 70 and manufacturer's installation instructions

B. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

C. UL DWMU - Conduit or Cable Support Strap:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB Electrification Installations Products
b. CADDY; brand of nVent Electrical plc
c. Cooper B-line; brand of Eaton, Electrical Sector
d. Hilti, Inc.
e. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated
f. Southwire Company, LLC

2. Source Limitations: Obtain products from single manufacturer.
3. Product Listing Criteria: UL CCN DWMU; including UL 2239 or UL 1565.

PART 3 - EXECUTION

3.1 SELECTION OF PATHWAYS FOR COMMUNICATIONS SYSTEMS

A. Unless more stringent requirements are specified in Contract Documents or manufacturers' published instructions, comply with NFPA 70 for selection of duct raceways. Consult Architect for resolution of conflicting requirements.

B. Type OFR and Type CR Communications Raceways: Comply with Table 800.154(b) of NFPA 70.

C. Minimum Pathway Size:

1. For Copper and Aluminum Cables: Metric designator 21 (trade size 3/4).

D. Maximum Pathway Length Between Cable Access Points: 75 ft.

E. Temperature Limitations:

1. Type PVC, Type HDPE, Type EPEC, Type OFR, and Type CR: Do not install where ambient temperature exceeds 122 deg F. Conductor ratings must be limited to 75 deg C except where installed in a trench outside buildings with concrete encasement, where 90 deg C conductors are permitted.
2. Type RTRC: Do not install where ambient temperature exceeds 230 deg F.

F. Indoor Pathways:

1. Concealed above Suspended Ceilings: EMT.
2. Concealed in Ceilings and Interior Walls and Partitions: EMT.
3. In Vertical Runs: EMT.

G. Duct Fittings: Select fittings in accordance with NEMA FB 2.10 guidelines.

1. ERMC and IMC: Provide threaded-type fittings unless otherwise indicated.

H. Surface Raceways: Where indicated on Drawings.

I. Boxes and Enclosures:

1. Outdoors, Aboveground: UL 50E Type 3R.
2. Indoors: UL 50E Type 1, except use Type 4 stainless steel units in institutional and commercial kitchens and damp or wet locations.

3.2 INSTALLATION OF PATHWAYS FOR COMMUNICATIONS SYSTEMS

A. Comply with manufacturers' published instructions, including limitations on distance, bends, and bend radius.

B. Reference Standards for Installation: Unless more stringent installation requirements are specified in Contract Documents or manufacturers' published instructions, comply with the following:

1. Type OFR Optical-Fiber Raceways: Article 800 of NFPA 70 and BICSI N1.
2. Type CR Communications Raceways: Article 800 of NFPA 70 and BICSI N1.
3. Cable Supports and Positioning Devices: Article 800 of NFPA 70 and BICSI N1.
4. Consult Architect for resolution of conflicting requirements.

C. Special Installation Techniques:

1. Complete communications raceway installation before starting conductor installation.
2. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies.
3. Provide hangers and supports for pathways, boxes, and enclosures.
4. Firestop pathway penetrations of fire-rated assemblies.

D. Interfaces with Other Work:

1. Coordinate installation of new communications pathways with existing conditions.
2. Grounding and Bonding: Bond metallic communications boxes and enclosures to metallic pathways.

END OF SECTION 27 05 28

SECTION 28 46 00 - FIRE DETECTION AND ALARM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fire-alarm system control units.
2. Manual fire-alarm boxes.
3. Smoke-sensing fire detectors.
4. Audible notification appliances.
5. Visual notification appliances.
6. Combination audible/visual notification appliances.
7. Fire-alarm cables.

B. Related Requirements:

1. Section 018116 "Facility Environmental Requirements" specifies basis-of-design environmental conditions and performance criteria that are applicable to product selection and installation of the Work on the Project.
2. Section 260010 "Supplemental Requirements for Electrical" specifies additional requirements applicable to coordinating, scheduling, and sequencing of the Work specified in this Section.
3. Section 078413 "Penetration Firestopping" specifies materials and methods for sealing penetrations of rated walls and partitions referenced by this Section.
4. Section 260529 "Hangers and Supports for Electrical Systems" specifies hangers, supports, and concrete bases referenced by this Section.
5. Section 260533.13 "Conduits for Electrical Systems" specifies raceway types installed by this Section.
6. Section 260553 "Identification for Electrical Systems" specifies electrical equipment labels and warning signs installed by this Section.
7. Section 260923 "Lighting Control Devices" specifies emergency lighting control interfaces referenced by this Section.
8. .Section 270528 "Pathways for Communications Systems" specifies additional requirements for raceway materials, routing, locations, and identification of communications equipment and cabling.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product. In addition to information identified in Section 013300 "Submittal Procedures," submit the following:

1. Product Listing: Include copy of unexpired approval letter, on letterhead of qualified electrical testing agency, certifying product's compliance with specified listing criteria.

a. If listed manufacturer differs from selling manufacturer, indicate relationship between entities on submittal. Clearly indicate which entity warrants product performance and fitness for purpose.
b. Listing criteria identified in approval letter must match specified listing criteria. UL label indicating approval of equipment's enclosure is not considered approval of equipment for intended application.
c. Product identification in approval letter must match product branding and model numbers in submittal. Approval letters for discontinued or superseded products are not acceptable for submitted product.

2. Include manufacturer's sample extended warranty language.

B. Shop Drawings: Prepare and submit the following:

1. Cover sheet indicating protected premises name and location and Owner information, name of installer, device legend and symbols in accordance with NFPA 170, and date of issue and any revision dates.
2. Floor Plans:

a. Floor or level identification.
b. Point of compass (indication of north).
c. Graphic scale.
d. All walls and doors.
e. All partitions extending to within 15 percent of the ceiling height.
f. Room and area descriptions.
g. Acoustically distinguishable spaces.
h. Minimum required illumination levels.
i. System devices/component locations.
j. Locations of the system's primary power disconnecting means.
k. Locations of monitor/control interfaces to other systems.
l. System riser locations.
m. Type and number of system components/devices on each circuit, on each floor or level.
n. Type and quantity of conductors and conduit for each circuit.
o. Identification of any ceiling over 10 ft in height where automatic fire detection is being proposed.
p. Details of ceiling geometries, including beams and solid joists, where automatic fire detection is being proposed.
q. Acoustic properties of spaces, where known.
r. Pathway class designations, including the location of any end-of-line supervisory or power devices that are required by the pathway class.
s. Pathway survivability level designations.

3. Wiring Diagrams:

a. System riser diagrams coordinated with the floor plans and indicating the following information:

1) General arrangement of the system in building cross-section.
2) Type and number of circuits in each riser.

3) Type and number of system components/devices on each circuit, on each floor or level.
4) Number of conductors for each circuit.
5) Pathway class designation, including the location of any end-of-line supervisory or power devices that are required by the pathway class.
6) Pathway survivability level designations.

b. Control unit diagrams for all existing control equipment, power supplies, battery chargers, and annunciators indicating the following information:

1) Identification of control equipment depicted.
2) Location(s) of control equipment.
3) All field wiring terminals and terminal identifications.
4) All circuits connected to field wiring terminals and circuit identifications.
5) All indicators and manual controls.
6) Field connections to supervising station signaling equipment, releasing equipment, and emergency safety control interfaces.

c. Typical fire-alarm component schematic wiring diagrams for all initiating devices, notification appliances, and annunciators.

4. Fire-Alarm Input/Output Sequence: Include a narrative description or input/output matrix of operation to describe the fire-alarm system sequence of operation.
5. Details:

a. Component installation details.

6. Calculations:

a. Battery calculations.
b. Voltage-drop calculations.
c. Spare capacity circuit calculations.

C. Field quality-control reports.

1.3 INFORMATIONAL SUBMITTALS

A. Manufacturer's published instructions.

B. Field Reports:

1. Manufacturer's field reports for field quality-control support.
2. Manufacturer's field reports for system startup support.

1.4 CLOSEOUT SUBMITTALS

A. Warranty documentation.

B. Maintenance service agreement.

C. Software and firmware service agreement.

1.5 WARRANTY FOR FIRE DETECTION AND ALARM SYSTEMS

A. Special Installer Extended Warranty: Installer warrants that installed fire detection and alarm system performs in accordance with specified requirements and agrees to repair or replace system components or products that fail to perform as specified within extended-warranty period. Warranty must convey to Owner upon acceptance of the Work.

1. Extended-Warranty Period: Two years from date of Substantial Completion; full coverage for labor, materials, and equipment.

B. Special Manufacturer Extended Warranty: Manufacturer warrants that fire detection and alarm system components perform in accordance with specified requirements and agrees to repair or replace system components or products that fail to perform as specified within extended-warranty period. Warranty must convey to Owner upon acceptance of the Work.

1. Initial Extended-Warranty Period: Five years from date of Substantial Completion; full coverage for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Products or components listed and labeled in accordance with NFPA 70 or NFPA 72, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

B. Existing System Description: Noncoded, UL-certified addressable system with multiplexed signal transmission and voice-and-strobe notification for evacuation.

C. Existing System Inputs:

1. Fire-alarm signal initiation must be by one or more of the following devices:

a. Manual fire-alarm boxes.
b. Heat detectors.
c. Smoke detectors.
d. Flame detectors.
e. Duct smoke detectors.
f. Air-sampling smoke-detection system.
g. Carbon monoxide detectors.
h. Combustible gas detectors.
i. Automatic sprinkler system water flow.
j. Preaction system alarm.

k. Fire-extinguishing system operation.
l. Fire standpipe system.
m. Dry-pipe sprinkler system pressure flow switch.
n. Fire pump is running.

2. Supervisory signal initiation must be by one or more of the following devices and actions:

a. Valve supervisory switch.
b. High- or low-air pressure switch of dry-pipe or preaction sprinkler system.
c. Alert and Action signals of air-sampling smoke-detection systems.
d. Duct smoke detectors.
e. Elevator shunt-trip control circuit supervision.
f. Independent fire-detection and fire-suppression systems.
g. Fire pump is running.
h. Fire pump has lost power.
i. Power to the fire pump has phase reversal.
j. Zones or individual devices have been disabled.
k. FACU has lost communication with network.
l. Hose cabinet door is open.

3. System trouble signal initiation must be by one or more of the following devices and actions:

a. Open circuits, shorts, and grounds in designated circuits.
b. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
c. Loss of communication with addressable sensor, input module, relay, control module, remote annunciator, or ethernet module.
d. Loss of primary power at FACU.
e. Ground or single break in internal circuits of FACU.
f. Abnormal AC voltage at FACU.
g. Break in standby battery circuitry.
h. Failure of battery charging.
i. Abnormal position of switch at FACU or remote annunciator.
j. Voice signal amplifier failure.
k.

D. Existing System Outputs:

1. Fire-alarm signal must initiate the following actions:

a. Continuously operate alarm notification appliances, including voice evacuation notices.
b. Identify alarm and specific initiating device at FACU, connected network control panels, off-premises network control panels.
c. Transmit alarm signal to remote alarm receiving station.
d. Unlock electric door locks in designated egress paths.
e. Release fire and smoke doors held open by magnetic door holders.
f. Activate voice/alarm communication system.

g. Switch HVAC equipment controls to fire-alarm mode.
h. Activate smoke-control system (smoke management) at firefighters' smoke-control system panel.
i. Activate stairwell and elevator-shaft pressurization systems.
j. Close smoke dampers in air ducts of designated air-conditioning duct systems.
k. Activate preaction system.
l. Recall elevators to designated or alternate recall levels only upon activation of smoke detectors in respective elevator lobbies, machine rooms, or hoistways.
m. Activate elevator power shunt trip only upon activation of associated heat detector.
n. Activate emergency lighting control.
o. Activate emergency shutoffs for gas and fuel supplies, except for shutoffs serving legally required life-safety systems such as emergency generators and fire pumps.
p. Record events in system memory.
q. Indicate device in alarm on graphic annunciator.

2. System supervisory signal must initiate the following actions:

a. Initiate supervisory notification appliances.
b. Identify specific device initiating event at FACU, connected network control panels, off-premises network control panels.
c. After time delay of 200 seconds, transmit trouble or supervisory signal to remote alarm receiving station.
d. Transmit system status to building management system.
e. Display system status on graphic annunciator.

2.2 MANUAL FIRE-ALARM BOXES

A. Description: A manually operated device used to initiate a fire-alarm signal. Manual fire-alarm boxes come in both conventional or addressable models and may require a single-action (pull down) or double-action (push in and pull down) to initiate a fire-alarm signal. These initiating devices are sometimes referred to as manual fire-alarm stations, pull stations, or call points.

B. UL UNIU - Double-Action Manual Fire-Alarm Boxes:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

a. Siemens Industry, Inc.; Fire Safety Division

2. Source Limitations: Obtain products from single manufacturer.
3. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Non-Coded Fire-Alarm Boxes: UL CCN UNIU, including UL 38 and NFPA 72.

4. Standard Features:

a. Product Reference Standards: Chs. 10 and 17 of NFPA 72.

b. Colored red with raised letters providing operating instructions.
c. Surface mounted.
d. Station Reset: Key operated switch.
e. Material: Polycarbonate.

C. Accessories:

1. Factory-fabricated clear plastic enclosure.
2. Weatherproof protective shield for conventional manual fire-alarm boxes located outdoors.

2.3 COMBINATION AUDIBLE/VISUAL NOTIFICATION APPLIANCES

A. Description: A fire-alarm system component such as a horn/strobe or loudspeaker/strobe that provides both an audible and a visible output to alert occupants by the sense of hearing and sight.

B. UL ULSZ and UVAV - Combination Horn/Strobe Appliances:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

a. Siemens Industry, Inc.; Fire Safety Division

2. Source Limitations: Obtain products from single manufacturer.
3. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:

a. Electrically Operated Signal-Sounding Appliances or Visual-Signal Appliances for Fire-Protective Signaling Applications: UL CCN ULSZ and UVAV, including UL 464, UL 1638, and NFPA 72.

4. Standard Features:

a. Product Reference Standards: Ch. 18 of NFPA 72.
b. Operating Temperature Range: 32 deg F to 120 deg F.
c. Compatible with wires up to 12 AWG.
d. Rated Light Output: 15, 30, 75 candela.
e. Clear or nominal white polycarbonate lens mounted on faceplate.
f. Strobe flash rate of 1 Hz over its entire operating range.
g. Operates on a coded or non-coded power supply.
h. Field-selectable candela settings.
i. Field-selectable volume settings.
j. Universal mounting plate for ceiling units.

5. Other Available Features Required by Project:

a. For units with guards to prevent physical damage, light output ratings must be

determined with guards in place.

b. Weather resistant to provide protection against water, humidity, and corrosion.

2.4 FIRE-ALARM CABLES

A. UL HNIR and FHJR - Fire-Resistive Circuit Integrity Power-Limited Fire-Alarm Plenum Cable (FPLP-CI):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Belden Inc.
   b. Radix Wire
   c. VITALink; Omni Cable

2. Listing Criteria:

   a. Power-Limited Fire-Alarm Cable: UL CCN HNIR; including UL 1424 and Article 760 of NFPA 70.
   b. Vertical-Tray Flame Test: UL 1685.
   c. Fire-Resistive Circuit Integrity "CI" Marking: UL CCN FHJR; including UL 2196.
   d. Plenum Rating: NFPA 262.

3. Standard Features:

   a. Twisted, shielded pair.
   b. Solid copper conductors with 300 V rated, 75 deg C, color-coded insulation.
   c. Conductor Size: Not smaller than Size recommended by manufacturer's published instructions.

4. Other Available Features Required by Project:

   a. Limited Smoke "ST1" Marking: UL 1685 or UL 2556.

B. UL HNIR and FHJR - Fire-Resistive Circuit Integrity Power-Limited Fire-Alarm Riser Cable (FPLR-CI):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Belden Inc.
   b. Comtran Corporation
   c. Radix Wire
   d. VITALink; Omni Cable

2. Listing Criteria:

   a. Power-Limited Fire-Alarm Cable: UL CCN HNIR; including UL 1424 and Article 760 of NFPA 70.

b. Vertical-Tray Flame Test: UL 1685.
c. Fire-Resistive Circuit Integrity "CI" Marking: UL CCN FHJR; including UL 2196.
d. Riser Rating: UL 1666.

3. Standard Features:

a. Twisted, shielded pair.
b. Solid copper conductors with 300 V rated, 75 deg C, color-coded insulation.
c. Conductor Size: Not smaller than Size recommended by manufacturer's published instructions.

4. Other Available Features Required by Project:

a. Limited Smoke "ST1" Marking: UL 1685 or UL 2556.

PART 3 - EXECUTION

3.1 INSTALLATION OF FIRE DETECTION AND ALARM SYSTEMS

A. Comply with manufacturer's published instructions.

B. Reference Standards for Installation: Unless more stringent installation requirements are specified in the Contract Documents or manufacturer's published instructions, comply with the following:

1. Electrical Construction: ICC IBC, ICC IFC, NFPA 1, NFPA 70, and NECA NEIS 1.
2. Commissioning of Electrical Systems: NECA NEIS 90.
3. Commissioning of Active and Passive Fire Protection Features: NFPA 3 and NFPA 4.
4. Fire-Alarm and Premises Security Work: NFPA 72, NFPA 731, NFPA 1225, and NECA NEIS 305.
5. Work in ITE Rooms: NFPA 75.
6. Work in Health Care Facilities: NFPA 99 and Article 517 of NFPA 70.
7. Life-Safety and Means-of-Egress Work: NFPA 101.
8. Emergency and Standby Power Work: NFPA 110, NFPA 111, and NECA NEIS 416.
9. Work in Confined Spaces: NFPA 350.
10. Work in Basements and Other Developed Subterranean Spaces: NFPA 520.
11. Work in Museums, Libraries, Places of Worship, and Historic Structures: NFPA 909 and NFPA 914.
12. Fire-Alarm Circuits and Pathways: Ch. 12 of NFPA 72 and Article 760 of NFPA 70.
13. Fire-Alarm Initiating Devices: Ch. 17 of NFPA 72.
14. Fire-Alarm Notification Appliances: Ch. 18 of NFPA 72.
15. Fire-Alarm Control Equipment: Ch. 23 of NFPA 72.
16. Fire-Alarm Transmitting Equipment: Ch. 23 and Ch. 26 of NFPA 72.
17. Consult Architect for resolution of conflicting requirements.

C. Interfaces with Other Work:

1. Identification: Provide labels for all new initiating devices, control equipment cabinets,

and associated electrical equipment.

a. Identify field-installed conductors, interconnecting wiring, and components.
b. Label initiating devices with unique identification.
c. Identify source of AC power inside each control equipment cabinet.
d. Identify circuit disconnecting means at AC power source with red engraved label. Provide approved locking device for circuit disconnecting means.
e. Label enclosures with engraved metal or laminated-plastic nameplate.
f. Identify junction box covers using the color red.
g. Identify using the color red.

2. Coordinate installation of new products for with existing conditions.

3.2 FIELD QUALITY CONTROL OF FIRE DETECTION AND ALARM SYSTEMS

A. Administrant for Fire-Alarm Tests and Inspections:

1. Contractor will engage qualified fire-alarm testing and inspecting agency to administer and perform tests and inspections.
2. Engage qualified fire-alarm testing and inspecting agency to administer and perform tests and inspections.
3. Engage factory-authorized service representative to administer and perform tests and inspections on components, assemblies, and equipment installations, including connections.
4. Administer and perform tests and inspections.

B. Field tests and inspections must be witnessed by authorities having jurisdiction.

C. Tests and Inspections:

1. Perform manufacturer's recommended tests and inspections.
2. Perform system acceptance testing in accordance with Ch. 14 of NFPA 72.
3. Contractor is responsible for completing pre-acceptance testing to verify proper operation of the fire detection and alarm systems. Correct system deficiencies prior to scheduling a final acceptance test.

D. Nonconforming Work:

1. Initiating devices, notification appliances, control equipment, and system accessories will be considered defective if they do not pass tests and inspections.
2. Remove and replace defective units and retest.

E. Field Quality-Control Reports: Collect, assemble, and submit test and inspection reports.

F. Manufacturer Services: Engage factory-authorized service representative to support field tests and inspections.

1. Manufacturer's Field Reports for Field Quality-Control Support: Prepare and submit report after each visit by factory-authorized service representative, documenting activities

performed at Project site.

3.3 SYSTEM STARTUP

A. Perform startup service.

1. Complete installation and startup checks in accordance with manufacturer's published instructions.
2. Provide power to the existing FACU and reconfigure internal settings.
3. Test all field wiring prior to connecting field devices and prior to connecting to the FACU. Ensure field wiring is free from ground faults and short circuits.
4. Connect field devices to field wiring.
5. Connect field wiring inside existing FACU cabinet.
6. Ensure system is normal and free from ground faults, open circuits, or short circuits.
7. Correct any issues that occur during the system burn-in period.

B. Manufacturer Services: Engage factory-authorized service representative to support system startup.

1. Manufacturer's Field Reports for System Startup Support: Prepare and submit report after each visit by factory-authorized service representative, documenting activities performed at Project site.

3.4 MAINTENANCE

A. Maintenance Service Agreement: Beginning at Substantial Completion, verify that maintenance service agreement includes three-month period for full maintenance by manufacturer's authorized service representative. Include annual preventive maintenance, repair, or replacement of worn or defective components newly installed; cleaning; and adjusting as required for proper fire detection and alarm system operation. Verify that parts and supplies are manufacturer's authorized replacement parts and supplies.

B. Software and Firmware Service Agreement:

1. Technical Support: Beginning at Substantial Completion, verify that existing software and existing firmware service agreement includes software and firmware support.
2. Upgrade Service: At Substantial Completion, update existing software and existing firmware to latest version.

    a. Upgrade Notice: Not less than 30 days; to allow Owner to schedule and access the system and to upgrade computer equipment if necessary.

3. Field Reports for Software and Firmware Upgrades: Prepare and submit report after each update, documenting upgrades installed.

END OF SECTION 28 46 00

SECTION 31 20 00 - EARTH MOVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating and filling for rough grading the Site.
2. Preparing subgrades for slabs-on-grade walks, pavements, turf and grasses and plants.
3. Subbase course for concrete walks pavements.

B. Related Requirements:
1. Section 329300 “Plants” for finish grading in planting areas and tree and shrub pit excavation and planting.
2. Section 321913 “Soil Preparation”
3. Employ erosion control measures as shown on the contract documents and otherwise necessary to prevent damage to on-site facilities and adjoining property. All measures shall be installed and maintained in conformance with the New York State DEC regulations including The Standards and Specifications for Erosion & Sedimentation Controls Manual. (the blue book, November 2016 or latest version).
    a. Refer to Drawings for additional information

1.2 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

C. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Director’s Representative. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices for rock excavation and changes in the Work for all other authorized excavation.
2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Director’s Representative. Unauthorized excavation, as well as remedial work directed by Director’s Representative, will be without additional compensation.

D. Fill: Soil materials used to raise existing grades.

E. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other fabricated stationary features constructed above or below the ground surface.

F. Structural Fill: Aggregate used to raise grades under structures shall conform to requirements for NYSDOT 733-04 type 2 or 4.

G. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement, or a cement concrete or hot-mix asphalt walk to conform to NYSDOT Specification Item 733-04 Type 2.

H. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

I. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct pre-excavation conference at Project site.

1. Review methods and procedures related to earthmoving, including, but not limited to, the following:

a. Personnel and equipment needed to make progress and avoid delays.
b. Coordination of Work with utility locator service.
c. Coordination of Work and equipment movement.
d. Extent of trenching by hand or with air spade.
e. Field quality control.

1.4 SUBMITTALS

A. Product Data: For each type of the following manufactured products required:

1. Geotextiles.
2. Subbase Materials

B. Qualification Data: For qualified testing agency.

C. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:

1. Classification according to ASTM D2487.
2. Laboratory compaction curve according to ASTM D1557.

D. Preexcavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earth-moving operations. Submit before earth moving begins.

1.5 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

B. Utility Locator Service: Contractor to have private utility locator service and notify UDig (811) before beginning earth-moving operations.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D2487, or a combination of these groups; free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D2487, or a combination of these groups.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Subbase Material: Aggregate to conform to NYSDOT Specification Item 733-04 Type 2.

E. Sand: ASTM C33/C33M; fine aggregate.

F. Number 1A and Number 2 Stone: Aggregate material meeting the requirements of NYSDOT Specification Section 703 Table 703-4.

2.2 GEOTEXTILES

A. Drainage Geotextile:

Mechanical Properties	**Test Method**	**Minimum Average**

Mechanical Properties	Test Method	Minimum Average
Grab Tensile Strength	ASTM D4632	160 lbs
Grab Tensile Elongation	ASTM D4632	50%
Trapezoid Tear Strength	ASTM D4533	60 lbs
CBR Puncture Strength	ASTM D6241	410 lbs
Apparent Opening Size	ASTM D4751	No. 70 sieve
Permittivity	ASTM D4491	1.5 sec^{-1}
Flow Rate	ASTM D4491	110 $gal/min/ft^2$
UV Resistance (at 500 hours)	ASTM D4355	70%

B. Separation Geotextile:

Mechanical Properties	Test Method	Minimum Average
Grab Tensile Strength	ASTM D4632	200 lbs
Grab Tensile Elongation	ASTM D4632	15%
Trapezoid Tear Strength	ASTM D4533	75 lbs
CBR Puncture Strength	ASTM D6241	700 lbs
Apparent Opening Size	ASTM D4751	No. 40 sieve
Permittivity	ASTM D4491	0.05 sec^{-1}
Flow Rate	ASTM D4491	4 $gal/min/ft^2$
UV Resistance (at 500 hours)	ASTM D4355	70%

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.

B. Protect and maintain erosion and sedimentation controls during earth-moving operations.

C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

C. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.

3.3 EXPLOSIVES

A. Explosives:

1. Do not use explosives.

3.4 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:

a. 6 inches (150 mm) beneath bottom of all pavements.

3.5 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.6 SUBGRADE INSPECTION

A. Notify Director’s Representative when excavations have reached required subgrade.

B. If Director’s Representative determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

C. Proof-roll subgrade below the building slabs and pavements with a self-propelled vibrating drum compactor having a static weight of at least 10 tons to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction 4 times. Limit vehicle speed to 3 mph (5 km/h).
2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Director's Representative, and replace with compacted structural fill as directed.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Director's Representative, without additional compensation.

3.7 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi (17.2 MPa), may be used when approved by Director's Representative.

1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Director's Representative.

3.8 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of any tree.

3.9 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
2. Surveying locations of underground utilities for Record Documents.
3. Testing and inspecting underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.10 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.11 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.12 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 12 inches (300 mm) in loose depth for material compacted by heavy compaction equipment and not more than 8 inches (2100 mm) in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D1557:
1. Under pavements, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 93 percent.

3.13 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:
1. Pavements: Plus or minus 1/2 inch (13 mm).

3.14 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

A. Place subbase course and base course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place subbase course and base course under pavements and walks as follows:

1. Install separation geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
2. Place subbase course and base course 6 inches (150 mm) or less in compacted thickness in a single layer.
3. Place subbase course and base course that exceeds 6 inches (150 mm) in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick.
4. Compact subbase course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D1557.

C. Pavement Shoulders: Place shoulders along edges of subbase course to prevent lateral movement. Construct shoulders, at least 12 inches (300 mm) wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D1557.

3.15 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
2. Determine that fill material classification and maximum lift thickness comply with requirements.
3. Determine, during placement and compaction, that in-place density of compacted fill complies with requirements.

B. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.

C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

D. Testing agency will test compaction of soils in place according to ASTM D1556, ASTM D2167, ASTM D2937, and ASTM D6938, as applicable. Tests will be performed at the following locations and frequencies:

1. Pavement Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 1000 sq. ft. of pavement but in no case fewer than three tests.

E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.16 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by Director’s Representative; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.17 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 312000

SECTION 32 14 00 - UNIT PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Concrete Pavers.
2. Setting Bed Material
3. Joint Material

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site

1.3 ACTION SUBMITTALS

A. Product Data:

1. For the following:

a. Pavers.
b. Joint materials.

B. Sieve Analyses: For aggregate setting-bed materials, according to ASTM C136.

C. Samples for Initial Selection: For each type of unit paver indicated and the following:

1. Joint materials involving color selection.

D. Samples for Verification: For full-size units of each type of unit paver indicated. Assemble no fewer than five Samples of each type of unit. Include Samples of the following:

1. Joint materials.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Material Certificates: For unit pavers. Include statements of material properties indicating compliance with requirements, including compliance with standards. Provide for each type and size of unit.

1. For solid interlocking paving units, include test data for freezing and thawing according to ASTM C67.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified unit paving installer. Installer's personnel assigned to the Work must have Concrete Paver Installer Certification from the Interlocking Concrete Pavement Institute (ICPI) with the following designation:

1. Commercial Paver Technician Designation.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store pavers on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

1.7 FIELD CONDITIONS

A. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of unit paver, joint material, and setting material from single source with resources to provide materials and products of consistent quality in appearance and physical properties.

2.2 CONCRETE PAVERS

A. Concrete Pavers, Solid Interlocking Paving Units: Complying with ASTM C936/C936M and resistant to freezing and thawing when tested according to ASTM C67, made from normal-weight aggregates.

B. Bartle Library
   1. Thickness: 2-5/8”
   2. Face size and Shape: 12” square
   3. Finish
      a. Field: Match color of field product on east vestibule of Bartle library
      b. Banding: Match color of banding product on east vestibule of Bartle library

C. Couper Administration Building
   1. Thickness: Match existing product
   2. Face size and Shape: Match existing product
   3. Finish
      a. Field: Match color of existing product
      b. Banding: Match color of existing product

2.3 AGGREGATE SETTING-BED MATERIALS

A. Graded Aggregate for Subbase: Sound, crushed stone or gravel complying with requirements in Section 312000 "Earth Moving" for subbase material.

B. Sand for Leveling Course: Sound, sharp, washed, natural sand or crushed stone complying with gradation requirements in ASTM C33/C33M for fine aggregate.

C. Drainage Geotextile complying with requirements in Section 312000 "Earth Moving" for drainage geotextile.

D. Polymeric Sand for Joint

2.4 BITUMINOUS SETTING-BED MATERIALS

A. Fine Aggregate for Setting Bed: ASTM D1073, No. 2 or No. 3.

B. Asphalt Cement: ASTM D3381/D3381M, Viscosity Grade AC-10 or Grade AC-20.

C. Neoprene-Modified Asphalt Adhesive: Paving manufacturer's standard adhesive consisting of oxidized asphalt combined with 2 percent neoprene and 10 percent long-fibered mineral fibers containing no asbestos.

D. Polymeric Sand for Joint Material

2.5 JOINT MATERIAL

A. Polymeric Sand
   1. Color: provide manufacturers full range of colors for selection by landscape architect

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces indicated to receive unit paving, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected

3.2 PREPARATION

A. Remove substances from concrete substrates

B. Sweep concrete substrates to remove dirt, dust, debris, and loose particles.

3.3 INSTALLATION, GENERAL

A. Do not use unit pavers with chips, cracks, voids, discolorations, or other defects that might be visible or cause staining in finished work.

B. Mix pavers from several pallets or cubes, as they are placed, to produce uniform blend of colors and textures.

C. Cut unit pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.

   1. For concrete pavers, a block splitter may be used.

D. Joint Pattern: Grid

E. Tolerances:

   1. Do not exceed 1/32-inch (0.8-mm) unit-to-unit offset from flush (lippage) or 1/8 inch in 10 feet (3 mm in 3 m) from level, or indicated slope, for finished surface of paving.

3.4 AGGREGATE SETTING-BED APPLICATIONS

A. Compact soil subgrade uniformly to at least 95 percent of ASTM D698 laboratory density.

B. Proof-roll prepared subgrade to identify soft pockets and areas of excess yielding. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.

C. Place separation geotextile over prepared subgrade, overlapping ends and edges at least 12 inches (300 mm).

D. Place aggregate subbase, compact by tamping with plate vibrator, and screed to depth indicated to 100 percent of ASTM D1557 maximum laboratory density, and screed to depth indicated.

E. Place drainage geotextile over compacted base course, overlapping ends and edges at least 12 inches (300 mm).

F. Place leveling course and screed to a thickness of 1 to 1-1/2 inches (25 to 38 mm), taking care that moisture content remains constant and density is loose and uniform until pavers are set and compacted.

G. Treat leveling course with herbicide to inhibit growth of grass and weeds.

H. Set pavers with a minimum joint width of 1/16 inch (1.5 mm) and a maximum of 1/8 inch (3 mm), being careful not to disturb leveling base. If pavers have spacer bars, place pavers hand tight against spacer bars. Use string lines to keep straight lines. Fill gaps between units that exceed 3/8 inch (10 mm)with pieces cut to fit from full-size unit pavers.
   1. When installation is performed with mechanical equipment, use only unit pavers with spacer bars on sides of each unit.

I. Vibrate pavers into leveling course with a low-amplitude plate vibrator capable of a 3500- to 5000-lbf (16- to 22-kN) compaction force at 80 to 90 Hz. Use vibrator with neoprene mat on face of plate or other means as needed to prevent cracking and chipping of pavers. Perform at least three passes across paving with vibrator.
   1. Compact pavers when there is sufficient surface to accommodate operation of vibrator, leaving at least 36 inches (900 mm) of uncompacted pavers adjacent to temporary edges.
   2. Before ending each day's work, compact installed concrete pavers except for 36-inch (900-mm) width of uncompacted pavers adjacent to temporary edges (laying faces).
   3. As work progresses to perimeter of installation, compact installed pavers that are adjacent to permanent edges unless they are within 36 inches (90 mm) of laying face.
   4. Before ending each day's work and when rain interrupts work, cover pavers that have not been compacted and cover leveling course on which pavers have not been placed with nonstaining plastic sheets to protect them from rain.

J. Spread dry polymeric sand and fill joints immediately after vibrating pavers into leveling course. Vibrate pavers and add sand until joints are completely filled, then remove excess polymeric sand. Remove excess jointing material.

K. Apply water to activate polymeric sand at rates determined by the manufacturer

L. Do not allow traffic on installed pavers until polymeric sand has been installed.

M. Repeat joint-filling process 30 days later.

3.5 BITUMINOUS SETTING-BED APPLICATIONS

A. Prepare for setting-bed placement by locating 3/4-inch- (19-mm-) deep control bars approximately 11 feet (3.3 m) apart and parallel to one another, to serve as guides for striking board. Adjust bars to subgrades required for accurate setting of paving units to finished grades indicated.

B. Place bituminous setting bed where indicated, in panels, by spreading bituminous material between control bars. Spread mix at a minimum temperature of 250 deg F (121 deg C). Strike setting bed smooth, firm, even, and not less than 3/4 inch (19 mm) thick. Add fresh bituminous material to low, porous spots after each pass of striking board. After each panel is completed, advance first control bar to next position in readiness for striking adjacent panels. Carefully fill depressions that remain after removing depth-control bars.
   1. Roll setting bed with power roller to a nominal depth of 3/4 inch (19 mm). Adjust thickness as necessary to allow accurate setting of unit pavers to finished grades indicated. Complete rolling before mix temperature cools to 185 deg F (85 deg C).

C. Apply neoprene-modified asphalt adhesive to cold setting bed by squeegeeing or troweling to a uniform thickness of 1/16 inch (1.6 mm). Proceed with setting of paving units only after adhesive is tacky and surface is dry to touch.

D. Place pavers carefully by hand in straight courses, maintaining accurate alignment and uniform top surface. Protect newly laid pavers with plywood panels on which workers can stand. Advance protective panels as work progresses, but maintain protection in areas subject to continued movement of materials and equipment to avoid creating depressions or disrupting alignment of pavers. If additional leveling of paving is required, and before treating joints, roll paving with power roller after sufficient heat has built up in the surface from several days of hot weather.

E. Joint Treatment: Place unit pavers with hand-tight joints. Fill joints by sweeping sand over paved surface until joints are filled. Remove excess sand after joints are filled.

3.6 REPAIRING AND CLEANING

A. Remove and replace unit pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.

B. Cleaning: refer to manufacturer’s recommendation for cleaning

END OF SECTION 321400

SECTION 32 33 00 - SITE FURNISHINGS

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. Planters system

B. Related Requirements:
   1. Section 312000 "Earth Moving" for stone material.
   2. Section 329300 “Plants” for Planting installation in planter system

1.3 ACTION SUBMITTALS

A. Product Data: Manufacturer’s technical literature for each product specified, identifying the following:
   1. Planter system material and finish.
   2. Planter system edge selection.
   3. Substrate material/method.
   4. Storage and handling requirements and recommendations.
   5. Leveling Pedestal selection

B. Shop Drawings
   1. Internal connections, section breaks, internal reinforcement, and base conditions. Show sequential layout of planter sections and connection points
   2. Integration of Tree Planters and Cantilevered benches
   3. Calculations for all internal connections, section breaks, internal reinforcement, and base conditions

C. Include manufacturer’s installation instructions. Samples for Verification: For each type of exposed finish, not less than 6-inch- (152-mm-) long linear components and 4-inch- (102-mm-) square sheet components.

D. Manufacturer’s color charts display the full range of factory-applied colors available for initial selection.

E. Manufacturer’s color charts display the full range of factory-applied colors available for initial selection.

F. Samples for verification: 6 by 6-inches (150 by 150 mm) material samples in the colors selected

1.4 INFORMATIONAL SUBMITTALS

A. Qualification data and certifications documenting requirements specified in Quality Assurance Article

B. Manufacturer's installation instructions.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For site furnishings to include in maintenance manuals.

B. Product warranty: Provide the manufacturer's written agreement to repair or replace planter system components that exhibit defects within the specified warranty period.
   1. Units are warranted to be free of defects in workmanship and materials under normal use not attributable to misuse, not attributable to neglect or mishandling of units, not attributable to installation method not approved by the manufacturer, and not the result of uncontrollable natural forces. Refer to the Manufacturer's published warranty for a full list of exclusions.
   2. Warranty Period: Five years from the date of product delivery.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

   1. Bench Replacement Planks: No fewer than two full-size units for each bench.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications:
   1. A manufacturer of planter systems of the type and extent required for the Project with a documented history of successful in-service performance, and:
      a. has been in continuous operation for a period of not less than ten years, and:
      b. has the production capacity to service the Project.
   2. All welding shall be performed by welders currently certified according to AWS D1.1/D1.1M Structural Welding Code, and as follows:
      a. AWS D1.1 Structural Steel
         1) ASTM A606 Type 4 and A588 Corten Steel.

B. Installer Qualifications: A firm experienced in installing planter systems of the type and extent required for the Project with a record of successful in-service performance and which is approved by the planter system manufacturer.

C. Domestically Produced Metals: Provide manufacturer's certification that all metals used in the manufacturing of metal planters have been domestically produced as defined by FAR 52.225-1 or other regulatory oversight standard acceptable to the Owner.

1.8 DELIVERY, STORAGE AND HANDLING

A. Comply with manufacturer's requirements for receipt of product delivered, inspection, storage, and handling

B. Inventory and inspect the condition of planter system components upon delivery. Reject damaged materials and arrange for replacement

C. Comply with the manufacturer's instructions for storage of planter systems prior to installation.

D. Handle products during transport, unloading, and installation using tools and methods that preserve their condition and prevent damage, including use of fork extensions where required.

PART 2 - PRODUCTS

2.1 PLANTER SYSTEM

A. landscape planter system consisting of full bottom, pre-finished metal sections, internally reinforced, assembled on the site with butted connections, and tightly fastened to produce continuous planter assemblies.

B. PERFORMANCE REQUIREMENTS
1. Structural Performance: Design and fabricate planter systems to withstand a uniform load of not less than 110 lbs. per cubic foot (1762 kg/cubic meter) with deflection not exceeding the following:
   a. Deflection limit: 1/16-inch (1.59 mm).
2. Thermal Movements: Design system to allow for thermal movement resulting from the following maximum change (range) in ambient temperature in the design, fabrication, and installation of planter systems.
   a. Temperature Change (Range): 120 deg. F. (49 deg. C) ambient ; 180 deg. F. (82 deg. C) materials surfaces.

C. MATERIALS
1. Corten steel planter system fabricated from carbon steel complying with ASTM A588 or ASTM A604 Type 4 sheet and plate, and as follows:
   a. Base Metal Thickness: As indicated and required for specified structural performance, but in no case less than 1/4-inch (6.35 mm).
   b. Section Dimensions: As indicated on the Drawings and the approved shop drawings.
   c. Edge Condition: Blade Edge
   d. Pre-weathered Corten steel finish, minimum 85% level oxidation, with temporary, breathable, zero-VOC surface sealer applied for handling.

e. Panel Fasteners: Bolts and nuts fabricated from Type 316 stainless steel, and complying with ASME B18.2.1, Grade 9 per SAE J429.
   1) Fastener Dimensions: As determined by the panel manufacturer based on the requirements of the Project
f. Panel Edge Sealant: Panel manufacturer's standard high strength elastomeric sealant, complying with ASTM C 920, Type S, Grade NS, Class 25, Tensile Strength of 250 psi (1.72 mPa) minimum
g. Leveling pedestals: Contractor shall provide premanufactured polypropylene leveling pedestals as required to ensure a stable level planter system without ability to shift, move or settle.

2. Wood: 18"depth to be constructed of minimum 2"x4" Thermally Modified Oak boards

D. INTREGRATED PRODUCTS
1. Integrate tree planters and cantilevered benches in accordance with manufacturer's recommendation and approved shop drawings.

E. FABRICATION
1. Planter system shall be fabricated and assembled by manufacturer in their entirety, up to 80LF, prior to finishing to ensure wall lines, corners, and connections are level and true in form. Reinforce interior of units sufficiently, per manufacturer's design.
   a. Fabrication Tolerances: 1/8-inch (3.75 mm) in width and 1/8-inch (3.75 mm) in length, with 1/16-inch (1.6 mm) tolerance for section wall connections.
2. Identify each planter section with a legible identification code welded in a concealed location when installed, for coordinating connections in the field. Record the identification code on the submitted shop drawings.
3. Welded Connections
   a. Use materials and methods that minimize distortion of base metals
   b. Obtain fusion according to referenced AWS standard
   c. Weld exposed corners and seams continuously
   d. Finish exposed welds to comply with NOMMA's Voluntary Joint Finish Standards for Finish #1 (No evidence of a welded joint).
4. Non-Welded Connections: Use the manufacturer's standard mechanical fasteners and fittings to produce flush, smooth, rigid hairline joints.
5. Form changes in direction of sections as shown on Drawings.
6. Fabricate planter units with close control of dimensions and details per manufacturer design per submitted and approved shop drawings.
7. Interior of units to be fully welded with primary seams being continuously welded and watertight. Internal reinforcement stiffeners and gussets to be stitch welded.
8. Provide 7/16-inch (11.1 mm) diameter pilot holes in base plates for anchoring sections to approved substrates.

F. FINISHING
1. Shop Finishing Preparation: Clean non-galvanized surfaces with a biodegradable phosphate-free alkaline solution. Thoroughly rinse and dry

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine prepared location for Planter installation. Evaluate the flatness, levelness, and overall condition of concrete substrates or leveling pedestals, to which the planter system will be sit upon.

B. Verify that the approved leveling pedestal system is properly installed according to the pedestal system manufacturer's requirements.

C. Document non-complying conditions and submit report to the Owner and Landscape Architect

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Erect planter units and accessories according to the Contract Documents, the manufacturer's written instructions, and approved shop drawings.

B. Do not enlarge or alter pre-drilled fastener holes.

C. Do not trim or otherwise modify planter sections with saws or torches.

D. Do not modify planter units in the field without the written approval of the planter system manufacturer. Unauthorized field modifications will void the manufacturer's warranty.

E. Sealant Application: Apply the specified sealant to connecting planter sections plates and connecting seams with a minimum set back of 2 inches (51 mm) to prevent excess sealant migration to exterior face of wall.

3.3 CLEANING AND PROTECTION

A. Clean finished surfaces as recommended by the manufacturer.

B. Apply non-marking insulation board parallel to exterior faces of planter system surfaces that are adjacent to other trade installations such as hardscape. Do not glue, tape or anchor protection to planter system exterior surfaces. Maintain dry, ventilated conditions until final acceptance.

C. Remove temporary protective coverings after interfacing work is completed

END OF SECTION 323300

SECTION 32 93 00 - PLANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plant materials.
2. Fertilizers.
3. Weed-control barriers.
4. Mulches.
5. Herbicides and pesticides.
6. Tree-stabilization materials.
7. Tree-watering devices.

B. Related Requirements:

1. Section 323300 “Site Furnishings” for Planter System

1.2 COORDINATION

A. Coordination with Planter System: Plant trees and install pre-grown sedum trays after system has been leveled, drainage stone installed, and lightweight soil media has been installed.

1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site

1.4 ACTION SUBMITTALS

A. Product Data:

1. Plant materials.
2. Fertilizers.
3. Weed-control barriers.
4. Mulches.
5. Herbicides and pesticides.
6. Tree-stabilization materials.
7. Landscape edgings.
8. Tree grates.

9. Tree-watering devices.

B. Product Data Submittals: For each product.

1. Plant Materials: Include quantities, sizes, quality, and verified sources for plant materials.

C. Samples for Verification: Actual sample of finished products for each of the following:

1. Organic Mulch: 1-pint (0.5-L) of each organic mulch required; typical of the lot of material to be furnished, in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch. Provide an accurate representation of color, texture, and organic makeup.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Statements: For landscape Installer. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.

B. Product Certificates: For each type of manufactured product, from manufacturer, and complying with manufacturer's certified analysis of standard products.

C. Pesticides and Herbicides: Product label and manufacturer's written application instructions specific to Project.

D. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of plants during a calendar year. Submit before expiration of required maintenance periods.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of plants.

1. Professional Membership: Member in good standing of either the National Association of Landscape Professionals or AmericanHort.
2. Experience: Five years' experience in landscape installation in addition to requirements in Section 014000 "Quality Requirements."
3. Installer's Field Supervision: Maintain an experienced full-time supervisor on Project site when work is in progress.
4. Personnel Certification: Installer's field supervisor certified in one of the following categories from the National Association of Landscape Professionals:

a. Landscape Industry Certified Technician - Exterior.

b. Landscape Industry Certified Interior.
c. Landscape Industry Certified Horticultural Technician.

5. Pesticide Applicator: State licensed, commercial.

B. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

1. Selection of plants purchased under allowances is made by Architect, who tags plants at their place of growth before they are prepared for transplanting.

C. Measurements: Measure in accordance with ANSI Z60.1. Do not prune to obtain required sizes.

1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container-grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper measurements 6 inches (150 mm) above the root flare for trees up to 4-inch (100-mm) caliper size, and 12 inches (300 mm) above the root flare for larger sizes.
2. Other Plants: Measure with stems, petioles, and foliage in their normal position.

D. Plant Material Observation: Architect may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Architect may also observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and may reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

1. Notify Architect of sources of planting materials 14 days in advance of delivery to site.

E. Sedum Tray Wind Uplift
1. Sedum trays to meet ANSI/SPRI RP-14 Wind Design Standard for Vegetative Roof Systems

1.8 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws if applicable.

B. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, or walkways and pavements; or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

C. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.

D. Handle planting stock by root ball.

E. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.

1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

F. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.

G. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.

1. Heel-in bare-root stock. Soak roots that are in less than moist condition in water for two hours. Reject plants with dry roots.
2. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
3. Do not remove container-grown stock from containers before time of planting.
4. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly wet condition.

1.9 FIELD CONDITIONS

A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.

B. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.

1. Spring Planting: April 15- June 15th
2. Fall Planting: September 15 – October 15

C. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions in accordance with manufacturer's written instructions and warranty requirements.

1.10 WARRANTY

A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner.
b. Structural failures, including plantings falling or blowing over.
c. Faulty performance of tree stabilization

2. Warranty Periods: From date of Substantial Completion

a. Trees: 12 months.
b. Sedum Trays: 18 months.

3. Include the following remedial actions as a minimum:

a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
b. Replace Trees that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
c. Replace Sedums Trays that are more than 10 percent dead or in an unhealthy condition at end of warranty period
d. A limit of one replacement of each plant is required except for losses or replacements due to failure to comply with requirements.
e. Provide extended warranty for period equal to original warranty period, for replaced plant material.

PART 2 - PRODUCTS

2.1 PLANT MATERIALS

A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant List, Plant Schedule, or Plant Legend indicated on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

1. Trees with damaged, crooked, or multiple leaders; with tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); with crossing trunks; with cut-off limbs more than 3/4 inch (19 mm) in diameter; or with stem girdling roots are unacceptable.
2. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.

B. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.

C. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which begins at root flare in accordance with ANSI Z60.1.

D. Labeling: Label each plant of each variety, size, and caliper with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable for plant.

E. If formal arrangements or consecutive order of plants is indicated on Drawings, select stock for uniform height and spread, and number the labels to ensure symmetry in planting.

F. Sedum Trays: Provide healthy, disease-free plants of species suitable for the climate in which they will be installed. Plants shall have well-established root systems reaching to sides of the container to maintain a firm ball, but not with excessive root growth encircling the container. Provide only plants that are acclimated to outdoor conditions before delivery.
   1. Tray size: 24” Square, 4.5” tray depth min.
      a. Material: heavy duty polypropylene with channelized bottom with weep holes
      b. Trays to secure together

2.2 FERTILIZERS

A. Granular Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

   1. Composition:

      a. 0.75 lb/1000 sq. ft. (0.34 kg/92.9 sq. m) 3 percent of actual nitrogen, 4 percent phosphorous, and 3 percent potassium, by weight.
      b. Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

B. Mycorrhizal Fungi: Dry, granular inoculant containing at least 5300 spores per lb (0.45 kg) of vesicular-arbuscular mycorrhizal fungi and 95 million spores per lb (0.45 kg) of ectomycorrhizal fungi, 33 percent hydrogel, and maximum of 5.5 percent inert material.

2.3 WEED-CONTROL BARRIERS

A. Nonwoven Geotextile Filter Fabric: Polypropylene or polyester fabric, 3 oz./sq. yd. (101 g/sq. m) minimum, composed of fibers inert to biological degradation and naturally resistant to chemicals, alkalis, and acids, formed into a stable network so that fibers retain their relative position.

B. Composite Fabric: Woven, needle-punched polypropylene substrate bonded to a nonwoven polypropylene fabric, 4.8 oz./sq. yd. (162 g/sq. m).

2.4 MULCHES

A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:

1. Type: Shredded hardwood
2. Size Range: 3 inches (76 mm) maximum, 1/2 inch (13 mm) minimum
3. Color: Natural.

2.5 HERBICIDES AND PESTICIDES

A. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

B. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

C. Pesticides: Registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended in writing by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

2.6 TREE-STABILIZATION MATERIALS

A. Trunk-Stabilization Materials:

1. Upright and Guy Stakes: Rough-sawn, sound, new hardwood free of knots, holes, cross grain, and other defects, 2-by-2-inch nominal (38-by-38-mm actual) by length indicated, pointed at one end.
2. Flexible Ties: Wide rubber or elastic bands or straps of length required to reach stakes or turnbuckles.
3. Guys and Tie Wires: ASTM A641/A641M, Class 1, galvanized-steel wire, two-strand, twisted, 0.106 inch (2.7 mm) in diameter.
4. Flags: Standard surveyor's plastic flagging tape, white, 6 inches (150 mm) long.

2.7 TREE-WATERING DEVICES

A. Slow-Release Watering Device: Standard product manufactured for drip irrigation of plants and emptying its water contents over two to three weeks manufactured from UV-light-stabilized nylon-reinforced polyethylene sheet, PVC, or HDPE plastic.
1. Color: green

2.8 MISCELLANEOUS PRODUCTS

A. Planter Drainage Gravel: Washed, sound crushed stone or gravel complying with AASHTO #57 Stone

B. Planter Filter Fabric: Nonwoven geotextile manufactured for separation applications and made of polypropylene, polyolefin, or polyester fibers or combination of them.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive plants, with Installer present, for compliance with requirements and conditions affecting installation and performance of the Work.

1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
2. Verify that plants and vehicles loaded with plants can travel to planting locations with adequate overhead clearance.
3. Suspend planting operations during periods of excessive soil moisture until moisture content reaches acceptable levels to attain required results.
4. Uniformly moisten excessively dry soil that is not workable or which is dusty.

B. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove soil and contamination as directed by Architect and replace with new planting soil.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain Landscape Architect's acceptance of layout before excavating or planting. Make minor adjustments as required.

3.3 PLANTING AREA ESTABLISHMENT

A. General: Prepare planting area for soil placement and mix planting soil in accordance with Section 329115 "Soil Preparation (Performance Specification)."

B. Placing Planting Soil: Place manufactured planting soil over exposed drainage geotextile.

C. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

D. Application of Mycorrhizal Fungi: At time directed by Architect, broadcast dry product uniformly over prepared soil at application rate in accordance with manufacturer's written instructions

3.4 EXCAVATION FOR TREES AND SHRUBS

A. Planting Pits and Trenches: Excavate circular planting pits.
   1. Excavate at least 12 inches (300 mm) wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
   2. Do not excavate deeper than depth of root ball, measured from the root flare to the bottom of root ball.
   3. If area under the plant was initially dug too deep, add soil to raise it to correct level and thoroughly tamp the added soil to prevent settling.
   4. Maintain angles of repose of adjacent materials to ensure stability. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
   5. Maintain supervision of excavations during working hours.
   6. Keep excavations covered or otherwise protected when unattended by Installer's personnel
   7. If drain tile is indicated on Drawings or required under planting areas, excavate to top of porous backfill over tile.

B. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.5 TREE, SHRUB, AND VINE PLANTING

A. Inspection: At time of planting, verify that root flare is visible at top of root ball in accordance with ANSI Z60.1. If root flare is not visible, remove soil in a level manner from root ball to where the top-most root emerges from the trunk. After soil removal to expose root flare, verify that root ball still meets size requirements.

B. Roots: Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.

C. Balled and Burlapped Stock: Set each plant plumb and in center of the planter with root flare 1 inch (25 mm) above adjacent finish grades.

   1. Backfill: Planting soil
   2. After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
   3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
   4. Distribute granular fertilizer around each planting pit when pit is approximately one-half filled. Do not place in bottom of the hole.

a. Quantity: Two per plant

5. Continue backfilling process. Water again after placing and tamping final layer of soil.

D. Container-Grown Stock: Set each tray plumb Retain
1. Distribute granular fertilizer around each planting pit when pit is approximately one-half filled. Do not place in bottom of the hole.

3.6 TREE PRUNING

A. Remove only dead, dying, or broken branches. Do not prune for shape.

B. Prune, thin, and shape trees as directed by Landscape Architect.

C. Prune, thin, and shape trees, in accordance with standard professional horticultural and arboricultural practices. Unless otherwise indicated by Architect, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs; and prune to retain natural character.

D. Do not apply pruning paint to wounds.

3.7 INSTALLATION OF TREE-STABILIZATION MATERIALS

A. Trunk Stabilization by Upright Staking and Tying: Install trunk stabilization as follows unless otherwise indicated:

1. Upright Staking and Tying:

a. Stake trees of 2- through 5-inch (50- through 125-mm) caliper. Stake trees of less than 2-inch (50-mm) caliper only as required to prevent wind tip out. Use a minimum of two stakes of length required to penetrate at least 18 inches (450 mm) below bottom of backfilled excavation and to extend to the bottom of the planter. Set vertical stakes and space to avoid penetrating root balls or root masses.
b. Stake trees with two stakes for trees up to 12 ft. (3.6 m) high and 2-1/2 inches (63 mm) or less in caliper; three stakes for trees less than 14 ft. (4.2 m) high and up to 4 inches (100 mm) in caliper. Space stakes equally around trees.

2. Support trees with bands of flexible ties at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.
3. Support trees with two strands of tie wire, connected to the brass grommets of tree-tie webbing at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.

B. Trunk Stabilization by Staking and Guying: Install trunk stabilization as follows unless otherwise indicated on Drawings. Stake and guy trees more than 14 ft. (4.2 m) in height and more than 3 inches (75 mm) in caliper unless otherwise indicated.

1. Site-Fabricated, Staking-and-Guying Method: Install no fewer than three guys spaced equally around tree.

    a. Securely attach guys to stakes 30 inches (760 mm) long, driven to grade. Adjust spacing to avoid penetrating root balls or root masses. Provide turnbuckle for each guy wire and tighten securely.
    b. Support trees with bands of flexible ties at contact points with tree trunk and reaching to turnbuckleAllow enough slack to avoid rigid restraint of tree.
    c. Support trees with guy cable, connected to brass grommets of tree-tie webbing at contact points with tree trunk and reaching to turnbuckle. Allow enough slack to avoid rigid restraint of tree.
    d. Attach flags to each guy wire, 30 inches (760 mm) above finish grade.

2. Proprietary Staking and Guying Device: Install staking and guying system sized and positioned as recommended by manufacturer unless otherwise indicated and in accordance with manufacturer's written instructions.

3.8 PLACING SOIL IN PLANTERS

A. Place a layer of drainage gravel 6” (150mm) thick in bottom of planter. Cover bottom with filter fabric and wrap filter fabric 4 inches (100 mm) up on all sides. Duct tape along the entire top edge of filter fabric, to secure filter fabric against the sides during soil-filling process.

B. Fill planter with planting soil. Place soil in lightly compacted layers to elevation of 1-1/2 inches (38 mm) below top of planter, allowing natural settlement.

3.9 INSTALLATION OF MULCHES

A. Install weed-control barriers before mulching in accordance with manufacturer's written instructions. Completely cover area to be mulched, overlapping edges minimum of 6 inches (150 mm) 12 inches (300 mm), and secure seams with galvanized pins.

B. Mulch backfilled surfaces of planting areas and other areas indicated.
    1. Organic Mulch in Planting Areas: Apply 3-inch (75-mm average thickness of organic mulch and finish level with adjacent finish grades. Do not place mulch within 3 inches (75 mm) of trunks or stems.

3.10 INSTALLATION OF TREE-WATERING DEVICES

A. Provide one device for each tree.

B. Place device on top of the mulch at base of tree stem and fill with water in accordance with manufacturer's written instructions.

3.11 APPLICATION OF HERBICIDES AND PESTICIDES

A. Pre-Emergent Herbicides (Selective and Nonselective): Apply to tree, shrub, and ground-cover areas in accordance with manufacturer's written instructions. Do not apply to seeded areas.

B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written instructions.

C. Apply pesticides and other chemical products and biological control agents according to authorities having jurisdiction and in accordance with manufacturer's written instructions. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

3.12 PLANT MAINTENANCE

A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings.

B. Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.

C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

3.13 REPAIR AND REPLACEMENT

A. Repair or replace existing or new trees and other plants that are damaged by construction operations, in a manner approved by Architect.

1. Submit details of proposed pruning and repairs.
2. Perform repairs of damaged trunks, branches, and roots within 24 hours, if approved.
3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Architect.

B. Remove and replace trees that are more than 25 percent dead or in unhealthy condition or are damaged during construction operations that Landscape Architect determines are incapable of restoring to normal growth pattern.

1. Species and Size of Replacement Trees: Same species and size being replaced

3.14 CLEANING AND PROTECTION

A. During planting, keep adjacent paving and construction clean and work area in an orderly condition. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.

C. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

D. After installation and before Substantial Completion remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.

E. At time of Substantial Completion, verify that tree-watering devices are in good working order and leave them in place. Replace improperly functioning devices.

END OF SECTION 329300

SECTION 33 42 00 - STORMWATER CONVEYANCE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Drains.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 QUALITY ASSURANCE

A. Drain material are to bear label, stamp, or other markings of manufacturer.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Handle drains in accordance with manufacturer's written instructions.

1.5 FIELD CONDITIONS

A. Interruption of Existing Storm Drainage Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service in accordance with requirements indicated:

   1. Notify Architect and Owner no fewer than 7 days in advance of proposed interruption of service.
   2. Do not proceed with interruption of service without Architect's and Owner's written permission.

PART 2 - PRODUCTS

2.1 DRAINS

A. Cast-Iron Area Drains:
   1. Source Limitations: Obtain cast-iron area drains and associated components from a single manufacturer.
      a. Manufacturers
         1) Zurn, 511 W. Freshwater Way Milwaukee, WI 53204. (855) 663-9876

2) Jay R Smith Mfg. Co., 2781 Gunter Park Dr. E., Montgomery, AL 36109-1405. (334) 277-8520
3) MIFAB Inc. 1321 West 119th Street Chicago, IL 60643. (800) 465-2736

2. Description: galvanized cast iron round body with rotatable square frame with seepage openings, frame clamps, heavy duty heel proof grate and sediment bucket
3. Include bottom outlet with inside caulk or spigot connection, of sizes indicated.
4. Top-Loading Classification(s): Heavy Duty.

B. Drain frames and Covers
1. Openings: 3/8 inch slots
2. Security: Vandal proof secured grate
3. Material Cast iron with polished nickeled bronze grate

PART 3 - EXECUTION

3.1 INSTALLATION OF DRAINS

A. Install type of drains in locations indicated.
1. Use Heavy-Duty, top-loading classification drains

B. Fasten drain assembly to concrete topping per manufacturers recommendation.

C. Fasten grates to drains if indicated.

D. Set drain frames and covers with tops flush with pavement surface.

3.2 CONNECTIONS

A. Connect drains in building's storm building drains based on manufacturer’s recommendation.

3.3 FIELD QUALITY CONTROL

A. Test new drains and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.

1. Do not enclose, cover, or put into service before inspection and approval.
2. Test completed piping systems in accordance with requirements of authorities having jurisdiction.
3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
4. Submit separate report for each test.
5. Gravity-Flow Storm Drainage Piping: Test in accordance with requirements of authorities having jurisdiction/

B. Leaks and loss in test pressure constitute defects that must be repaired.

C. Replace leaking connection using new materials, and repeat testing until leakage is within allowances specified.

3.4 CLEANING

A. Clean interior of piping of dirt and superfluous materials. Flush with potable water.

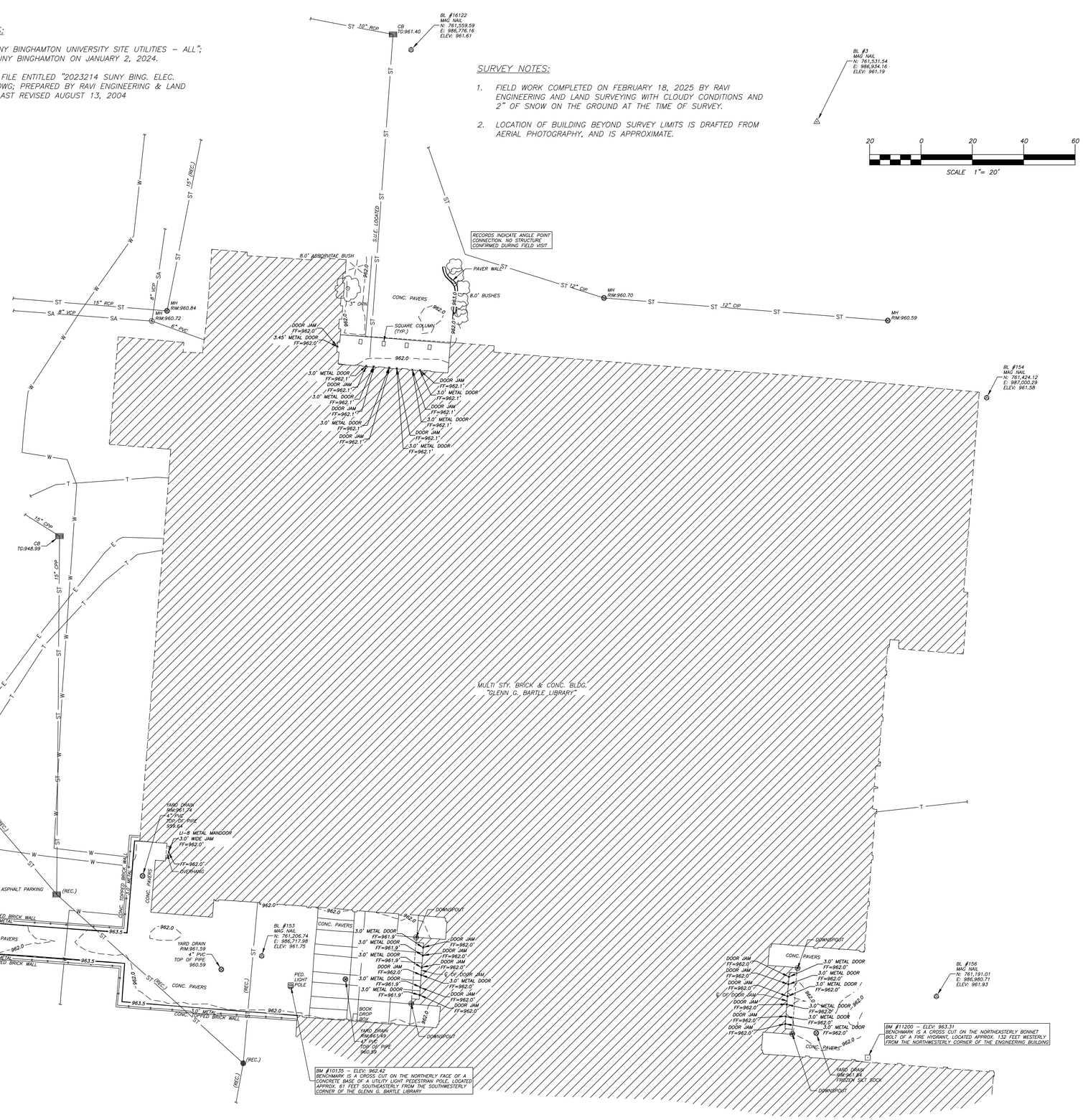
END OF SECTION 334200

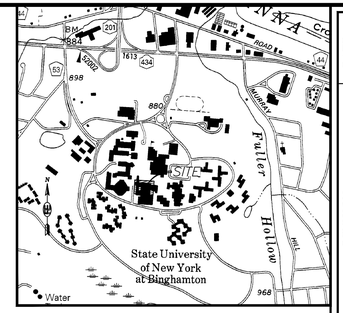
UTILITY REFERENCES:

1. MAP ENTITLED "SUNY BINGHAMTON UNIVERSITY SITE UTILITIES – ALL"; RECEIVED FROM SUNY BINGHAMTON ON JANUARY 2, 2024.
2. CIVIL 3D AUTOCAD FILE ENTITLED "2023214 SUNY BING. ELEC. DIST._SURV_BASE.DWG; PREPARED BY RAVI ENGINEERING & LAND SURVEYING, P.C.; LAST REVISED AUGUST 13, 2004

SURVEY NOTES:

1. FIELD WORK COMPLETED ON FEBRUARY 18, 2025 BY RAVI ENGINEERING AND LAND SURVEYING WITH CLOUDY CONDITIONS AND 2" OF SNOW ON THE GROUND AT THE TIME OF SURVEY.
2. LOCATION OF BUILDING BEYOND SURVEY LIMITS IS DRAFTED FROM AERIAL PHOTOGRAPHY, AND IS APPROXIMATE.





CITY OF BINGHAMTON
LOCATION SKETCH
N.T.S.

GPS NOTES:

* RAVI ENGINEERING & LAND SURVEYING CERTIFIES THAT THE SURVEY CONNECTIONS TO THE CONTROL STATIONS MEET OR EXCEED THE MINIMUM ACCURACY STANDARDS AND SPECIFICATIONS AS REQUIRED BY THE LAWS OF NEW YORK, 1995 – CHAPTER 605.

A. GPS DERIVED FROM NYSNet, A SPATIAL REFERENCE NETWORK OF CONTINUOUSLY OPERATING GLOBAL POSITIONING SYSTEM (GPS) REFERENCE STATIONS (CORS) MONUMENT "NYBH BINGHAMTON CORS ARP".
B. ALL COORDINATES SHOWN ARE NYS PLANE COORDINATES (CENTRAL ZONE); DATUM IS NAD83 (2011) AND NAVD 88' (VERT).
C. TO CONVERT FROM GROUND DISTANCES TO GRID DISTANCES MULTIPLY BY A COMBINED SCALE FACTOR OF 0.99992856 CALCULATED AT BASELINE #160 AND HAVING AN ELLIPSOIDAL HEIGHT OF 851.138 FT. FROM A STARNET (V12) GPS NETWORK ADJUSTMENT DATED FEBRUARY 24, 2025.
D. ALL DISTANCES SHOWN ARE GROUND DISTANCES, EXPRESSED IN US SURVEY FEET.
E. ALL AREAS SHOWN ARE GROUND DISTANCES.
F. ALL BEARINGS SHOWN ARE GRID BEARINGS UNLESS OTHERWISE NOTED.

BASE STATIONS USED:

PID	DESIGNATION	LATITUDE	LONGITUDE
DI0442	NYBH BINGHAMTON CORS ARP	N42°06'35.097"	W075°49'38.703"

LEGEND

- SURVEY CONTROL POINT
- BORING LOCATION
- SURVEY BENCHMARK
- UTILITY LIGHT POLE
- UTILITY POLE
- PEDESTRIAN LIGHT POLE
- POST
- FLAG POLE
- SIGN
- CONIFEROUS SHRUB
- TREE STUMP
- DECIDUOUS SHRUB
- DECIDUOUS TREE
- CONIFEROUS TREE
- UTILITY ELECTRIC METER
- UTILITY ELECTRIC MANHOLE
- UTILITY SANITARY MANHOLE
- UTILITY TELEPHONE MANHOLE
- UTILITY DRAINAGE MANHOLE
- UTILITY UNKNOWN MANHOLE
- UTILITY DRAINAGE CATCHBASIN
- UTILITY FIRE HYDRANT
- UTILITY WATER VALVE
- UTILITY GAS VALVE
- UTILITY UNKNOWN VALVE
- E — E — UTILITY UNDERGROUND ELECTRIC
- G — G — UTILITY UNDERGROUND GAS MAIN
- T — T — UTILITY UNDERGROUND TELEPHONE
- SA — SA — UTILITY SANITARY SEWER
- ST — ST — UTILITY STORM SEWER
- STM — STM — STM — STM — UTILITY STEAM
- W — W — UTILITY UNDERGROUND WATER MAIN
- FO — FO — UTILITY UNDERGROUND FIBER OPTICS
- OE — UTILITY OVERHEAD ELECTRIC WIRES
- O/H — UTILITY OVERHEAD WIRES
- APPROXIMATE BUILDING LINE

NO.	REVISION	DATE

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2110 South Clinton Avenue, Suite 1
Rochester, NY 14618
NYS Certificate of Authority Engineering: 21194 Surveying: 20790
TEL: (585) 223-3660 FAX: (585) 697-1764

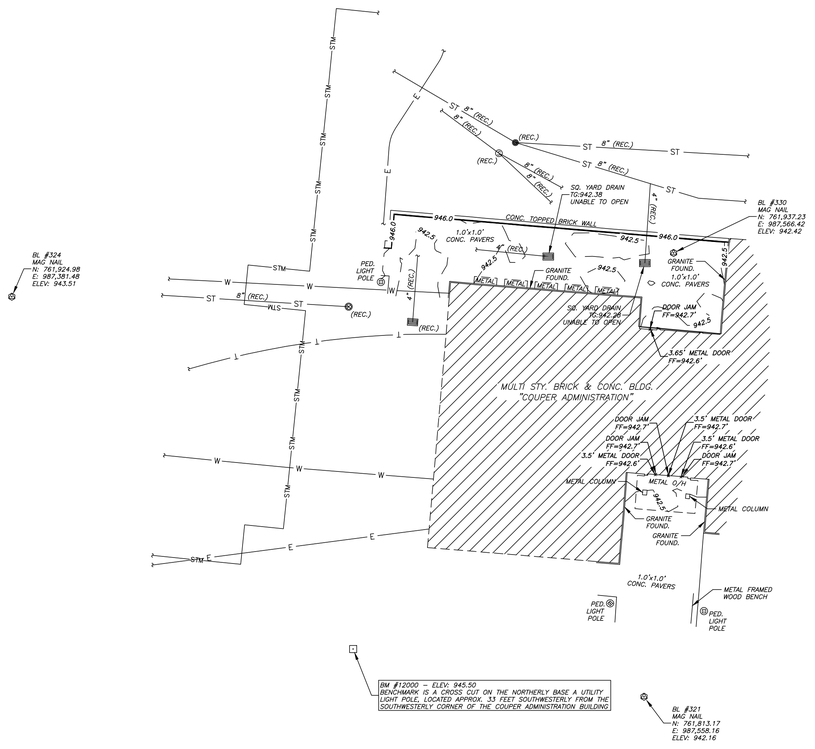
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MAPPING BY: JOHN FREEMAN
SCALE: 1"=20'

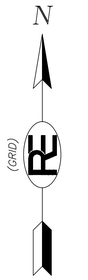
TOPOGRAPHIC DOORWAY SURVEY
OF THE GLENN G. BARTLE LIBRARY
BINGHAMTON UNIVERSITY
CITY OF BINGHAMTON BROOME COUNTY STATE OF NEW YORK

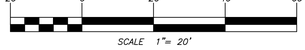
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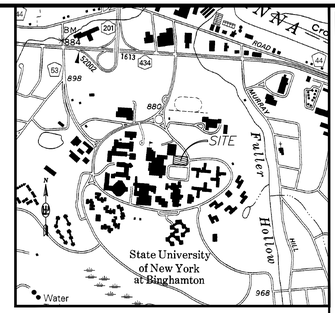
ISSUE DATE MAR. 3, 2025

SHEET 1 OF 1









CITY OF BINGHAMTON
LOCATION SKETCH
N.T.S.

LEGEND

- SURVEY CONTROL POINT
- BORING LOCATION
- SURVEY BENCHMARK
- UTILITY LIGHT POLE
- UTILITY POLE
- PEDESTRIAN LIGHT POLE
- POST
- FLAG POLE
- SIGN
- CONIFEROUS SHRUB
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- UTILITY DRAINAGE MANHOLE
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- W — W — UTILITY UNDERGROUND WATER MAIN
- FO — FO — UTILITY UNDERGROUND FIBER OPTICS
- OE — UTILITY OVERHEAD ELECTRIC WIRES
- O/H — UTILITY OVERHEAD WIRES
- APPROXIMATE BUILDING LINE

SURVEY NOTES:

1. FIELD WORK COMPLETED ON FEBRUARY 19, 2025 BY RAVI ENGINEERING AND LAND SURVEYING WITH CLOUDY CONDITIONS AND 3" OF SNOW ON THE GROUND AT THE TIME OF SURVEY.
2. LOCATION OF BUILDING BEYOND SURVEY LIMITS IS DRAFTED FROM AERIAL PHOTOGRAPHY, AND IS APPROXIMATE.

UTILITY REFERENCE:

1. MAP ENTITLED "SUNY BINGHAMTON UNIVERSITY SITE UTILITIES – ALL"; RECEIVED FROM SUNY BINGHAMTON ON JANUARY 2, 2024.

GPS NOTES:

* RAVI ENGINEERING & LAND SURVEYING CERTIFIES THAT THE SURVEY CONNECTIONS TO THE CONTROL STATIONS MEET OR EXCEED THE MINIMUM ACCURACY STANDARDS AND SPECIFICATIONS AS REQUIRED BY THE LAWS OF NEW YORK, 1995 – CHAPTER 605.

A. GPS DERIVED FROM NYSNet, A SPATIAL REFERENCE NETWORK OF CONTINUOUSLY OPERATING GLOBAL POSITIONING SYSTEM (GPS) REFERENCE STATIONS (CORS) MONUMENT "NYBH BINGHAMTON CORS ARP".
B. ALL COORDINATES SHOWN ARE NYS PLANE COORDINATES (CENTRAL ZONE); DATUM IS NAD83 (2011) AND NAVD 88' (VERT).
C. TO CONVERT FROM GROUND DISTANCES TO GRID DISTANCES MULTIPLY BY A COMBINED SCALE FACTOR OF 0.99992965 CALCULATED AT BASELINE #321 AND HAVING AN ELLIPSOIDAL HEIGHT OF 835.68 FT. FROM A STARNET (V12) GPS NETWORK ADJUSTMENT DATED FEBRUARY 24, 2025.
D. ALL DISTANCES SHOWN ARE GROUND DISTANCES, EXPRESSED IN US SURVEY FEET.
E. ALL AREAS SHOWN ARE GROUND DISTANCES.
F. ALL BEARINGS SHOWN ARE GRID BEARINGS UNLESS OTHERWISE NOTED.

BASE STATIONS USED:

PID	DESIGNATION	LATITUDE	LONGITUDE
DI0442	NYBH BINGHAMTON CORS ARP	N42°06'35.097"	W075°49'38.703"

NO.	REVISION	DATE

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2110 South Clinton Avenue, Suite 1
Rochester, NY 14618
NYS Certificate of Authority Engineering: 21194 Surveying: 20790
TEL: (585) 223-3660 FAX: (585) 697-1764

PROJECT SURVEYOR: JONATHAN NAVAGH, PLS
MAPPING BY: JOHN FREEMAN
SCALE: 1"=20'

TOPOGRAPHIC DOORWAY SURVEY
OF THE COUPER ADMINISTRATION BUILDING
BINGHAMTON UNIVERSITY
CITY OF BINGHAMTON BROOME COUNTY
STATE OF NEW YORK

PROJECT #: 20-24-248

ISSUE DATE: MAR. 3, 2025

SHEET 1 OF 1

LIMITED PRE-RENOVATION HAZARDOUS MATERIAL INSPECTION

SUNY Binghamton University
Replace Storefront Bartle Library
4400 Vestal Parkway East
Binghamton, New York 13902



Prepared For:

QPK Design, LLP
450 South Salina Street
Syracuse, New York 13202

Prepared By:

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618

April 2025

Project No. 43-24-238A

Preface

A Limited Hazardous Materials Inspection consisting of a Limited Pre-Renovation Asbestos Survey/Inspection and a Limited Polychlorinated Biphenyl (PCB) Caulk Survey has been completed at SUNY Binghamton University Bartle Library, 4400 Vestal Parkway East, Binghamton, New York. The original Scope of Work included a Limited Lead Paint Survey; however, no painted surfaces were observed in the proposed renovation area, therefore no paint samples were taken. The results of the Survey/Inspection are included in this report, and are presented in two volumes, namely:

Volume 1 of 2: Limited Pre-Renovation Asbestos Survey/Inspection

Volume 2 of 2: Limited PCB Caulk Survey

Prepared by:



Lynn Zicari
Environmental Project Manager
Ravi Engineering & Land Surveying, P.C.

Reviewed by:



Benjamin Reddy
Environmental Department Manager
Ravi Engineering & Land Surveying, P.C.

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

SUNY Binghamton University
Replace Storefront Bartle Library
4400 Vestal Parkway East
Binghamton, New York 13902



Volume 1 of 2

Prepared For:

QPK Design, LLP
450 South Salina Street
Syracuse, New York 13202

Prepared By:

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618

April 2025

Project No. 43-24-238A

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

SUNY Binghamton University
Replace Storefront Bartle Library
4400 Vestal Parkway East
Binghamton, New York 13902

Volume 1 of 2

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ATTACHMENT B *ASBESTOS-CONTAINING MATERIALS LOCATIONS PLANS*
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EXECUTIVE SUMMARY

Ravi Engineering & Land Surveying, P.C. (RE&LS) was retained by QPK Design, LLP (QPK) to conduct a Limited Pre-Renovation Asbestos Survey/Inspection at the State University of New York Binghamton (SUNY Binghamton) Bartle Library to support the storefront replacement renovation project, 4400 Vestal Parkway East, Binghamton, New York. The Survey/Inspection was conducted on February 28, 2025 and was limited to the Bartle Library (Attachment A).

The scope of work was based on telephone and electronic correspondence between RE&LS and QPK through August 2024, a pre-bid walkthrough at SUNY Binghamton on July 15, 2024, and the document *SUCF Project Title: Study – Exterior Envelope Investigation – Library and Administration Towers*, dated January 2024.

TABLE 1 – ASBESTOS SUMMARY TABLE

ASBESTOS-CONTAINING MATERIALS
Gray Door Caulk
Gray Expansion Caulk
NON ASBESTOS-CONTAINING MATERIALS
White Plaster
Gray Plaster
White Gypsum Board
White Joint Compound
White 2'x2' Recessed Textured Acoustical Ceiling Tile
Gray Fibrous 1'x1' Fissured Spline Ceiling Tile
Brown Pliable Door Caulk
White Ceramic Tile Grout
Gray Ceramic Tile Cement

Asbestos-containing materials (ACM) have been identified in the proposed renovation areas. Locations of ACMs are shown on the Asbestos-Containing Materials Location Plans in Attachment B.

No demolition, renovation, remodeling, or repair work shall commence by any owner or owner's agent in areas where ACMs and/or suspect ACMs exist prior to the completion of asbestos abatement. The Construction Manager shall notify all subcontractors of the presence and locations of ACMs and suspect ACMs consistent with OSHA regulation 29 CFR 1926.1101. Suspect ACMs, not identified in this Survey/Inspection report, discovered during renovation or demolition activities shall be assumed to contain asbestos until laboratory analysis proves otherwise.

1.0 INTRODUCTION

Ravi Engineering & Land Surveying, P.C. (RE&LS) was retained by QPK Design, LLP (QPK) to conduct a Limited Pre-Renovation Asbestos Survey/Inspection at the State University of New York Binghamton (SUNY Binghamton) Bartle Library to support the storefront replacement renovation project. A Certified Asbestos Inspector assessed functional spaces for suspect asbestos-containing building materials that may be impacted by the proposed renovation project to determine the presence, location, quantity, and condition of asbestos-containing materials (ACMs). The Survey/Inspection was conducted on February 28, 2025, and was limited to Bartle Library.

2.0 PROJECT OVERVIEW

The Survey/Inspection was conducted to support the SUNY Binghamton renovation project at SUNY Binghamton Bartle Library. The scope of work was based on telephone and electronic correspondence between RE&LS and QPK through August 2024, a pre-bid walkthrough at SUNY Binghamton on July 15, 2024, and the document *SUCF Project Title: Study – Exterior Envelope Investigation – Library and Administration Towers*, dated January 2024.

3.0 RECORD REVIEW

No previous sampling data was available for review at the time of the Survey/Inspection.

4.0 SITE INSPECTION

The Survey/Inspection began with a visual assessment to identify homogeneous areas (HAs) that exist within the proposed renovation areas. The United States Environmental Protection Agency (USEPA) Asbestos Hazard Emergency Response Act (AHERA) regulations define an HA as, "…an area of surfacing material, thermal system insulation material, or miscellaneous material that is uniform in color and texture." Further, HAs should be collected from each construction vintage (age) independently, even if newly constructed.

The Inspectors identified HAs that were present in each inspected location. Each HA was given a number corresponding to the identified material. HA numbers used by RE&LS in this Survey/Inspection were given the following alpha-numeric coding:

1A	Homogeneous Area Number 1, sample A (A, B, C, etc. refer to the total amount of samples collected for that HA based on AHERA sampling protocol)

Given this alpha-numeric coding, sample 33A is identified as *White Plaster*, first sample. The areas of inspection applicable to this report are shown on the Sample Location Plans in Attachment A. HA numbers used for asbestos bulk sampling are listed in Table 2.

Eleven (11) HAs, based on color, texture, date of construction and historical laboratory data were identified, of which twenty four (24) samples were collected and submitted to Paradigm Environmental Services, Inc. (Paradigm) for asbestos analysis.

TABLE 2 – HOMOGENEOUS AREAS

Homogeneous Area No. (HA)	Material Description
33	White Plaster
34	Gray Plaster
35	White Gypsum Board
36	White Joint Compound
37	White 2'x2' Recessed Textured Acoustical Ceiling Tile
38	Gray Fibrous 1'x1' Fissured Spline Ceiling Tile
39	Brown Pliable Door Caulk
40	Gray Door Caulk
41	Gray Pliable Sticky Expansion Caulk

Homogeneous Area No. (HA)	Material Description
42	White Ceramic Tile Grout
43	Gray Ceramic Tile Cement

5.0 ASBESTOS BULK SAMPLING

RE&LS is a New York State Licensed Asbestos Contractor employing New York State Department of Health (NYSDOH)/USEPA Certified Asbestos Inspectors. Asbestos bulk sampling procedures were performed in compliance with all applicable Occupational Safety and Health Administration (OSHA), USEPA, and New York State (NYS) sampling protocols.

Bulk sample analysis was performed by Paradigm, an NYSDOH-approved laboratory. Friable samples were analyzed using NYS Environmental Laboratory Approval Program (ELAP) Method EPA 600/M4/82/020 Polarized Light Microscopy (PLM). Non-friable organically bound (NOB) samples were analyzed using NYS ELAP Method 198.6 PLM and, if found to be less than or equal to 1% asbestos by weight, NYS ELAP Method 198.4 Transmission Electron Microscopy (TEM). Paradigm's Laboratory Analytical Report is included in Attachment E. A copy of Paradigm's Certification is included in Attachment F.

6.0 ASBESTOS-CONTAINING MATERIALS AND LOCATIONS

Two HAs were identified within the proposed renovation area as ACM. Table 3 identifies the materials determined to be ACMs, along with their description, sample number, asbestos content, and approximate quantity. Locations of ACMs and assumed ACM are shown on the Asbestos-Containing Materials Location Plans in Attachment B.

TABLE 3 – ASBESTOS-CONTAINING MATERIALS AND LOCATIONS

Homogeneous Area No. (HA)	Material Description and Location	Sample Number	Asbestos Content and Type of Analysis	Approximate Quantity
40	Gray Pliable Door Caulk on LI-1 Door Frame	40A 40B	1.8% Chrysotile - PLM 2.0% Chrysotile - PLM	10 SF
41	Gray Pliable Sticky Expansion Caulk on LI-1 Expansion Joint	41A 41B	2.0% Chrysotile – PLM 2.1% Chrysotile - PLM	10 SF

SF: Square Feet
PLM: Polarized Light Microscopy

7.0 LIMITATIONS OF THE INVESTIGATION

The Survey/Inspection included the spaces outlined in Section 2.0 Project Overview above. Suspect ACMs, not identified in this Survey/Inspection report, discovered during demolition or renovation activities shall be assumed to contain asbestos until laboratory analysis proves otherwise.

8.0 CONCLUSIONS

A Limited Pre-Renovation Asbestos Survey/Inspection was conducted at SUNY Binghamton Bartle Library, 4400 Vestal Parkway East, Binghamton, New York 13902 to support the storefront replacement renovation project. The Survey/Inspection was based on the scope items as described in Section 2.0 Project Overview above.

ACMs were identified in the proposed renovation areas. Locations of ACMs are shown on the Asbestos-Containing Materials Location Plans in Attachment B.

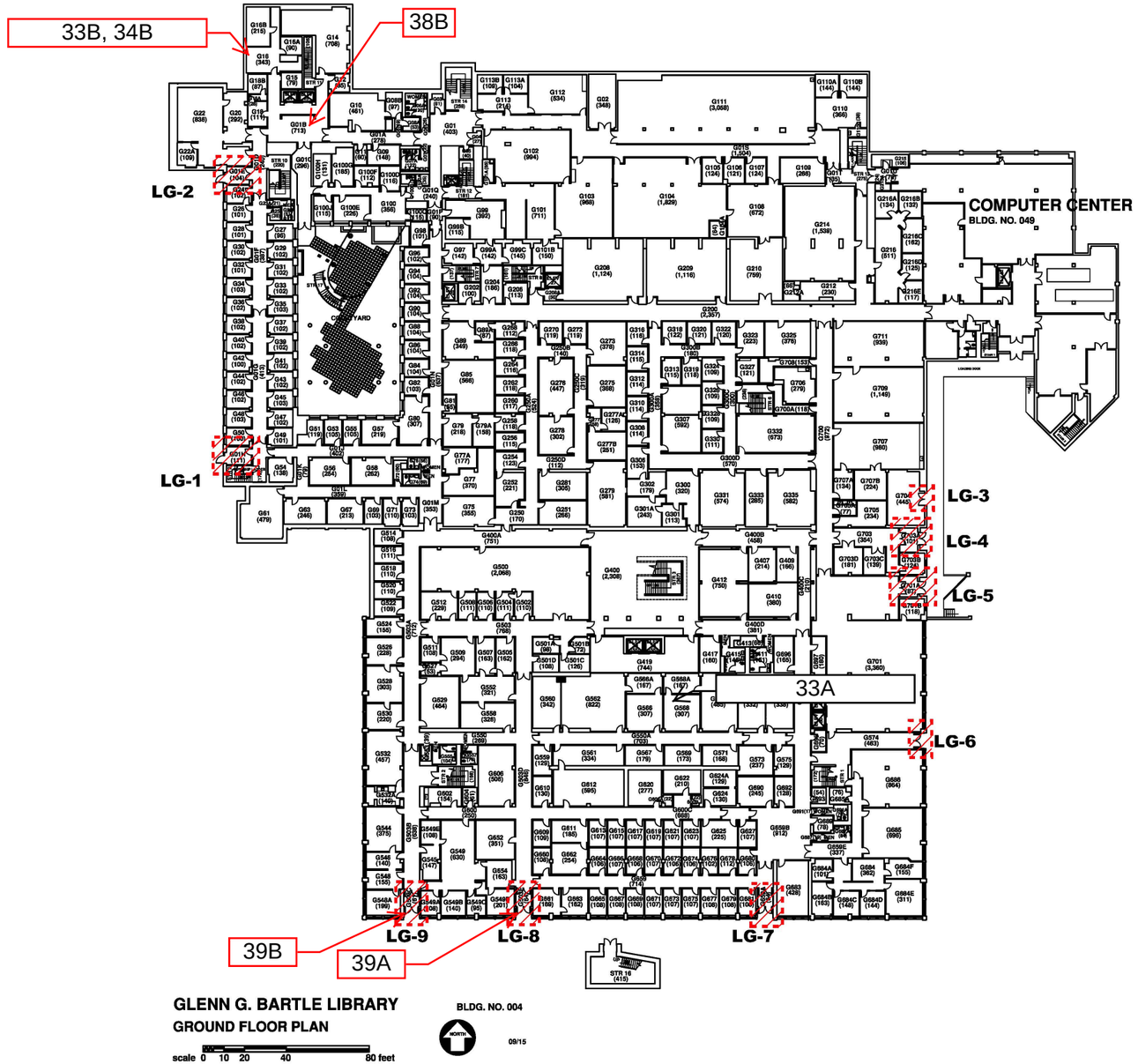
No demolition, renovation, remodeling, or repair work shall commence by any owner or owner's agent in areas where ACMs and/or suspect ACMs exist prior to the completion of asbestos abatement. The Construction Manager shall notify all subcontractors of the presence and locations of ACMs and suspect ACMs consistent with OSHA regulation 29 CFR 1926.1101. Suspect ACMs, not identified in this Survey/Inspection report, discovered during renovation or demolition activities shall be assumed to contain asbestos until laboratory analysis proves otherwise.

ATTACHMENT A

Areas of Inspection/Bulk Sample Location Plans

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton
Replace Storefront Bartle Library
4400 Vestal Parkway East
Binghamton, New York 13902



LEGEND
SAMPLE LOCATIONS XX

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618
TL: (585) 223-3660 FX (585) 697-1764

SUNY BINGHAMTON
REPLACE STOREFRONT BARTLE LIBRARY
LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

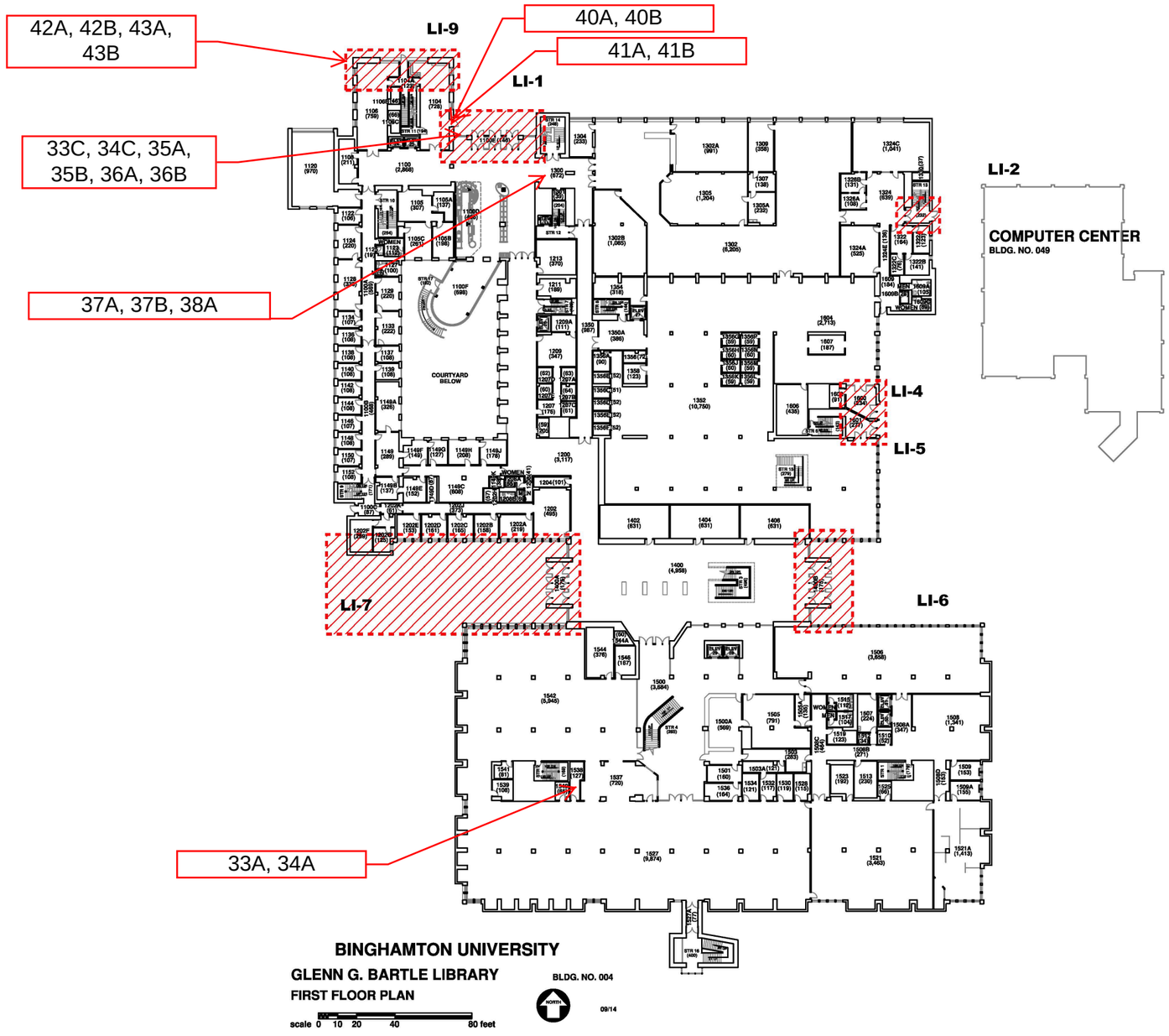
ATTACHMENT A: AREAS OF INSPECTION/BULK SAMPLE LOCATION PLANS

PROJECT NO. 43-24-238A

DATE: APRIL 2025

SCALE: N.T.S.

DRAWING NO: DWG-01



LEGEND
SAMPLE LOCATIONS XX

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618
TL: (585) 223-3660 FX (585) 697-1764

SUNY BINGHAMTON
REPLACE STOREFRONT BARTLE LIBRARY
LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

PROJECT NO. 43-24-238A

DATE: APRIL 2025

ATTACHMENT A: AREAS OF INSPECTION/BULK SAMPLE LOCATION PLANS

SCALE: N.T.S.

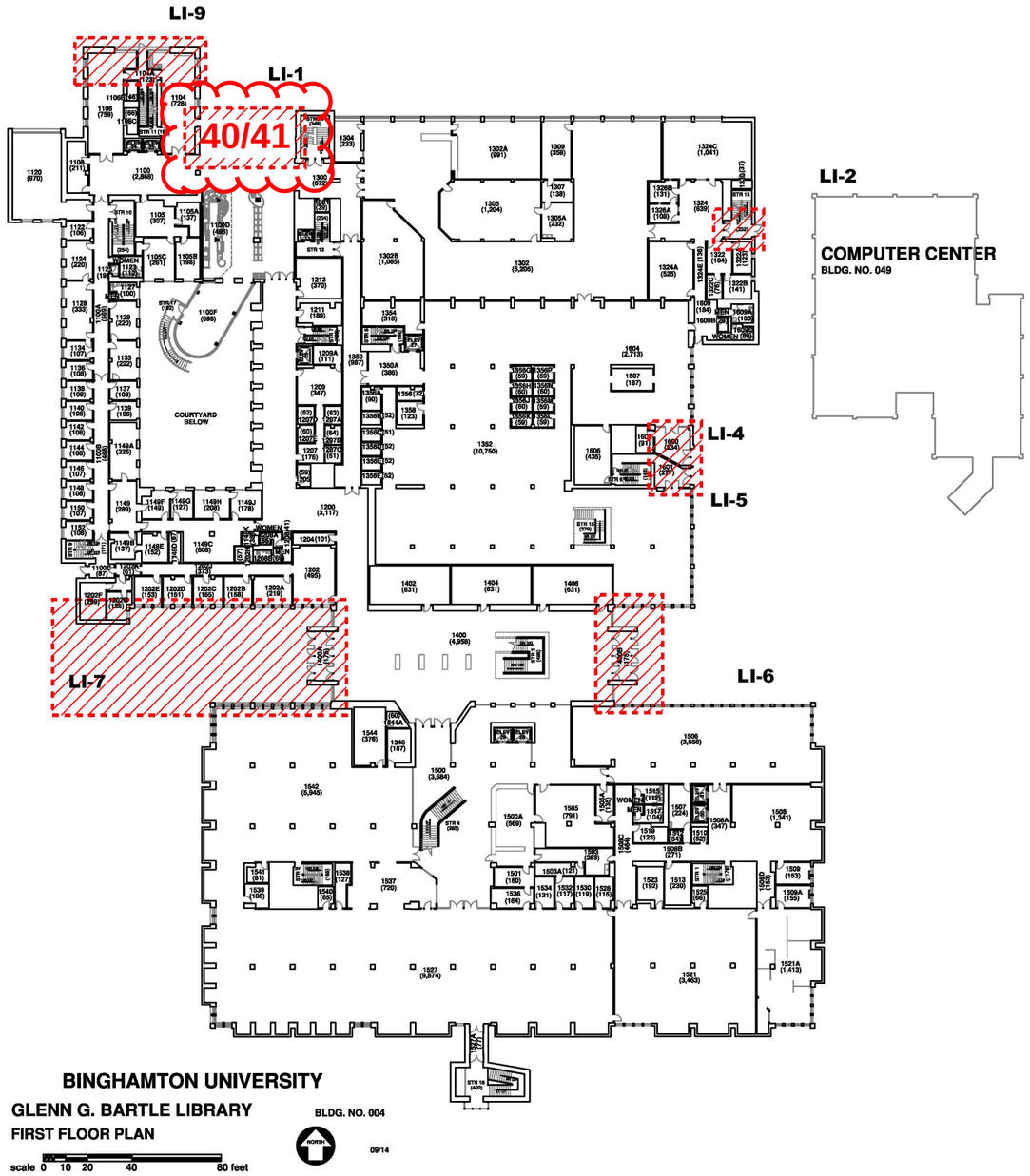
DRAWING NO: DWG-02

ATTACHMENT B

Asbestos-Containing Materials Location Plans

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton
Replace Storefront Bartle Library
4400 Vestal Parkway East
Binghamton, New York 13902



Legend

40 Gray Door Caulk

41 Gray Expansion Joint Caulk

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618
TL: (585) 223-3660 FX (585) 697-1764

SUNY BINGHAMTON
REPLACE STOREFRONT BARTLE LIBRARY
LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

PROJECT NO. 43-24-238A

DATE: APRIL 2025

ATTACHMENT B: ASBESTOS-CONTAINING MATERIAL LOCATION PLANS

SCALE: N.T.S.

DRAWING NO: DWG-01

ATTACHMENT C

Asbestos-Containing Materials Summary Table

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton
Replace Storefront Bartle Library
4400 Vestal Parkway East
Binghamton, New York 13902

Asbestos-Containing Materials Summary Table						
Homogeneous Area No. (HA)	**Homogeneous Area Description**	**Location**	**Sample Numbers**	**Asbestos Content and Type of Analysis**	**Approximate Quantity**	**Note on Asbestos Location Plans (Attachment B)**
40	Gray Door Caulk	LI-1	40A 40B	1.8% Chrysotile - PLM 2.0% Chrysotile - PLM	10 SF	
41	Gray Expansion Joint Caulk	LI-1	41A 41B	2.0% Chrysotile -PLM 2.1% Chrysotile - PLM	10 SF	

PLM: Polarized Light Microscopy
SF: Square Feet
LF: Linear Feet

ATTACHMENT D

Asbestos-Containing Materials Photo Log

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton
Replace Storefront Bartle Library
4400 Vestal Parkway East
Binghamton, New York 13902

Asbestos-Containing Materials Photo Log
SUNY Binghamton Replace Storefront Bartle Library

Photo 1	
HA# 40 GRAY DOOR CAULK 1.8% CHRYSOTILE - PLM 2.0% CHRYSOTILE - PLM	

Photo 2	
HA# 41 GRAY PLIABLE STICKY EXPANSION CAULK 2.0% CHRYSOTILE - PLM 2.1% CHRYSOTILE - PLM	

ATTACHMENT E

Analytical Reports and Chain of Custody Forms

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton
Replace Storefront Bartle Library
4400 Vestal Parkway East
Binghamton, New York 13902

PARADIGM
ENVIRONMENTAL SERVICES

179 Lake Avenue, Rochester, NY 14608 Office: (585) 647-2530

PLM & TEM BULK ASBESTOS ANALYSIS REPORT
via NYSDOH ELAP Method 198.1,198.4 and 198.6

Client: Ravi Engineering & Land Surveying, P.C.
Location: Binghamton University, Bartle Library
Binghamton, New York
Sample Date: 2/28/2025

Job No: 1899-25
Page: 1 of 6

Client ID	Lab ID	Sampling Location	Description	PLM Asbestos Fibers Type & Percentage	PLM Total Asbestos	NOB	TEM Asbestos Fibers Type & Percentage	TEM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage	Non-Fibrous Matrix Material %
33-A	18356	1538 Wall	White Plaster	None Detected	0%		Not Required	N/A	None Detected	100%
34-A	18357	1538 Wall	Gray Plaster	None Detected	0%		Not Required	N/A	None Detected	100%
33-B	18358	G16 Ceiling	White Plaster	None Detected	0%		Not Required	N/A	None Detected	100%
34-B	18359	G16 Ceiling	Gray Plaster	None Detected	0%		Not Required	N/A	None Detected	100%
33-C	18360	1300 Wall	White Plaster	None Detected	0%		Not Required	N/A	None Detected	100%
34-C	18361	1300 Wall	Gray Plaster	None Detected	0%		Not Required	N/A	None Detected	100%
35-A	18362	1300 Wall	White Gypsum Board	None Detected	0%		Not Required	N/A	Cellulose 4% Fiberglass 1%	95%
35-B	18363	1300 Wall	White Gypsum Board	None Detected	0%		Not Required	N/A	Cellulose 4% Fiberglass 1%	95%
36-A	18364	1300 Wall	White Joint Compound	None Detected	0%		Not Required	N/A	None Detected	100%
36-B	18365	1300 Wall	White Joint Compound	None Detected	0%		Not Required	N/A	None Detected	100%

KEY TO NOB COLUMN SYMBOLS
No Symbol in the NOB column denotes sample analyzed by ELAP Method 198.1 (PLM).
√ NOB (non-friable organically bound)denotes material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
√̃ denotes material analyzed by ELAP Method 198.6 (PLM) per NYSDOH. This Method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite.
 # denotes friable material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
X denotes sample prepped only by ELAP Method 198.6.
**** Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials.**
Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.

PLM Bulk Asbestos Analysis by New York State Department of Health, ELAP Method 198.1 ,198.4 and 198.6 ("Polarized Light Microscopy and Transmission Electron Microscopy Methods for Identifying and Quantitating Asbestos in Bulk Samples and in Non-Friable Organically Bound Bulk Samples.")or EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab Code 200530-0).

NVLAP TESTING

ELAP ID No.: 10958

Lab Code 200530-0 for PLM Analysis

Microscope: Olympus BH-2 #221797
PLM Analyst: K. Acosta
Date of Analysis: 3/10/2025

Microscope: JEOL-100CX-II #EM-156094-87
TEM Analyst: N/A
Date of Analysis: N/A

Laboratory Results Approved By:
Asbestos Technical Director or Designee Fernanda Weinman

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PARADIGM
ENVIRONMENTAL SERVICES

179 Lake Avenue, Rochester, NY 14608 Office: (585) 647-2530

PLM & TEM BULK ASBESTOS ANALYSIS REPORT
via NYSDOH ELAP Method 198.1,198.4 and 198.6

Client: Ravi Engineering & Land Surveying, P.C.
Location: Binghamton University, Bartle Library
Binghamton, New York
Sample Date: 2/28/2025

Job No: 1899-25

Client ID	Lab ID	Sampling Location	Description	PLM Asbestos Fibers Type & Percentage	PLM Total Asbestos	NOB	TEM Asbestos Fibers Type & Percentage	TEM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage	Non-Fibrous Matrix Material %
37-A	18366	1300 Ceiling	White 2'x2' Recessed Textured Acoustical Ceiling Tile	Inconclusive No Asbestos Detected	0%	#	None Detected	<1.0%	None Detected	100%
37-B	18367	1300 Ceiling	White 2'x2' Recessed Textured Acoustical Ceiling Tile	Inconclusive No Asbestos Detected	0%	#	None Detected	<1.0%	None Detected	100%
38-A	18368	1300 Ceiling	Gray Fibrous 1'x1' Fissured Spline Ceiling Tile	Inconclusive No Asbestos Detected	0%	#	None Detected	<1.0%	Mineral Wool 20%	80%
38-B	18369	Not Provided	Gray Fibrous 1'x1' Fissured Spline Ceiling Tile	Inconclusive No Asbestos Detected	0%	#	None Detected	<1.0%	Mineral Wool 10%	90%
39-A	18370	LG-8 Door Frame	Brown Pliable Door Caulk	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
39-B	18371	LG-9 Door Frame	Brown Pliable Door Caulk	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
40-A	18372	LI-1 Door Frame	Gray Door Caulk	Chrysotile 1.8%	1.8%	√	Not Required	N/A	None Detected	98.2%
40-B	18373	LI-1 Door Frame	Gray Door Caulk	Chrysotile 2.0%	2.0%	√	Not Required	N/A	None Detected	98%
41-A	18374	LI-1 Expansion Joint	Gray Pliable Sticky Expansion Caulk	Chrysotile 2.0%	2.0%	√	Not Required	N/A	None Detected	98%
41-B	18375	LI-1 Expansion Joint	Gray Pliable Sticky Expansion Caulk	Chrysotile 2.1%	2.1%	√	Not Required	N/A	None Detected	97.9%

KEY TO NOB COLUMN SYMBOLS

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√ NOB (non-friable organically bound)denotes material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
V̄ denotes material analyzed by ELAP Method 198.6 (PLM) per NYSDOH. This Method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite.
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X denotes sample prepped only by ELAP Method 198.6.
**** Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.**

PLM Bulk Asbestos Analysis by New York State Department of Health, ELAP Method 198.1 ,198.4 and 198.6 ("Polarized Light Microscopy and Transmission Electron Microscopy Methods for Identifying and Quantitating Asbestos in Bulk Samples and in Non-Friable Organically Bound Bulk Samples.")or EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab Code 200530-0).

NVLAP TESTING

ELAP ID No.: 10958

Lab Code 200530-0 for PLM Analysis

Microscope: Olympus BH-2 #211874
PLM Analyst: T. Bush
Date of Analysis: 3/10/2025

Microscope: JEOL-100CX-II #EM-156094-87
TEM Analyst: M. Lochner
Date of Analysis: 3/12/2025

Laboratory Results Approved By:
Asbestos Technical Director or Designee Fernanda Weinman

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PARADIGM
ENVIRONMENTAL SERVICES

179 Lake Avenue, Rochester, NY 14608 Office: (585) 647-2530

PLM & TEM BULK ASBESTOS ANALYSIS REPORT
via NYSDOH ELAP Method 198.1,198.4 and 198.6

Client: Ravi Engineering & Land Surveying, P.C.
Location: Binghamton University, Bartle Library
Binghamton, New York
Sample Date: 2/28/2025

Job No: 1899-25
Page: 3 of 6

Client ID	Lab ID	Sampling Location	Description	PLM Asbestos Fibers Type & Percentage	PLM Total Asbestos	NOB	TEM Asbestos Fibers Type & Percentage	TEM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage	Non-Fibrous Matrix Material %
42-A	18376	LI-9 Over Hang	White Ceramic Tile Grout	None Detected	0%		Not Required	N/A	None Detected	100%
42-B	18377	LI-9 Over Hang	White Ceramic Tile Grout	None Detected	0%		Not Required	N/A	None Detected	100%
43-A	18378	LI-9 Over Hang	Gray Ceramic Tile Cement	None Detected	0%		Not Required	N/A	None Detected	100%
43-B	18379	LI-9 Over Hang	Gray Ceramic Tile Cement	None Detected	0%		Not Required	N/A	None Detected	100%

KEY TO NOB COLUMN SYMBOLS
No Symbol in the NOB column denotes sample analyzed by ELAP Method 198.1 (PLM).
√ NOB (non-friable organically bound)denotes material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
Ṽ denotes material analyzed by ELAP Method 198.6 (PLM) per NYSDOH. This Method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite.
 # denotes friable material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
X denotes sample prepped only by ELAP Method 198.6.
**** Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials.**
Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.

PLM Bulk Asbestos Analysis by New York State Department of Health, ELAP Method 198.1 ,198.4 and 198.6 ("Polarized Light Microscopy and Transmission Electron Microscopy Methods for Identifying and Quantitating Asbestos in Bulk Samples and in Non-Friable Organically Bound Bulk Samples.")or EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab Code 200530-0).

NVLAP TESTING

ELAP ID No.: 10958

Lab Code 200530-0 for PLM Analysis

Microscope: Olympus BH-2 #211874
PLM Analyst: T. Bush
Date of Analysis: 3/7/2025

Microscope: JEOL-100CX-II #EM-156094-87
TEM Analyst: N/A
Date of Analysis: N/A

Laboratory Results Approved By:
Asbestos Technical Director or Designee Fernanda Weinman

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CHAIN OF CUSTODY FOR BULK ASBESTOS ANALYSIS

Ravi Rates

PARADIGM

[X] 179 Lake Avenue, Rochester, New York 14608 — Office: 585-647-2530
[ ] 1815 Love Road, Grand Island , New York 14072 — Office: 716-775-5777

Client: Ravi Engineering & Land Survey P.C.	**Contact:** Tony Hill
Phone Number: (585) 223-3660	**Email Address for Data:** Ahill@ravieng.com
Client Mailing Address: 2110 S. Clinton Ave, Suite 1 Rochester, New York 14618	**Results To** Tony Hill **Turn Around Time:** 1 [ ] 2 [ ] 3 [ ] 5 [X] 3-12 Other [ ] **Date Sampled** 2/28/2025 **Material Type/Quantity:** Friable ___ NOB ___ TEM ___
Ravi Project # 43-25-238A	**Project Location:** Binghatmon University - Bartle Library, Binghamton, New York

OFFICE USE ONLY
Job #: 1899-25
Page 4 of 6≤
Date Logged In: 3.5.25
Logged In By: KA
1 of 3

	Client ID	Lab ID	Sampling Location	Color	Material Size	Type of Material
1	33A	18356	1538 wall	WH		Plaster
2	~~34A~~	357	↓	GRY		↓
3	33B	358	G16 ceiling	WH		
4	34B	359	↓	GRY		
5	33C	360	1300 wall	WH		
6	34C	361	↓	GRY		↓
7	35A	362	1300 wall	WH		GypsumBoard
8	35B	363	↓	↓		↓
9	36A	364				Joint Compound
#	36B	365	↓	↓		↓

Sampled By: Tony Hill **Date:** 2/28/25

Transported to ~~Paradigm~~ By: [signature] **Date:** 3/5/25

Received By: [signature] **Date:** 3.5.25 1710

By signing this form, client agrees to Paradigm Terms and Conditions (reverse).

All samples will be analyzed by the appropriate New York State Department of Health methods (198.1,198.4 and 198.6) unless EPA 600/M4/82/020 per 40 CFR 763 and/or EPA 600/R-93/116 methods are requested.

CHECK TO AUTOMATICALLY PERFORM TEM ON NOBS [x]
or provide TEM contact name:

TOTAL NUMBER OF SAMPLES ON ALL CHAINS OF CUSTODY: 1

pg 1 of 3

CHAIN OF CUSTODY FOR BULK ASBESTOS ANALYSIS

PARADIGM

[X] 179 Lake Avenue, Rochester, New York 14608 — Office: 585-647-2530
[ ] 1815 Love Road, Grand Island , New York 14072 — Office: 716-775-5777

Ravi Rates

Client: Ravi Engineering & Land Survey P.C.	**Contact:** Tony Hill	**OFFICE USE ONLY**
Phone Number: (585) 223-3660	**Email Address for Data:** Ahill@ravieng.com	**Job #:** 1899.25
Client Mailing Address: 2110 S. Clinton Ave, Suite 1	**Results To** Tony Hill	**Turn Around Time:** 1 [ ] 2 [ ] 3 [ ] 5 [X] 3-12 Other [ ]	**Page** 5 **of** 6 3
Rochester, New York 14618	**Date Sampled** 2/28/2025	**Material Type/Quantity:** Friable ___ NOB ___ TEM ___	**Date Logged In:** 3.5.25
Ravi Project # 43-25-238A	**Project Location:** Binghatmon University - Bartle Library, Binghamton, New York		**Logged In By:** KA 2of3

	Client ID	Lab ID	Sampling Location	Color	Material Size	Type of Material
1	37A	183606	1300 Ceiling	WH	2'x2'	recessed textured acoustical ceiling tile
2	37B	367	↓	↓	↓	↓
3	38A	368	1300 Ceiling GO1	GRY	1'x1'	Fissured spline ceiling tile
4	38B	369	~~Basement Elevator lobby Ceiling~~ GO2 GO3	↓	↓	↓
5	39A	370	LG-8 door frame	BRN		Pliable door caulk
6	39B	371	LG-9 door frame	↓		↓
7	40A	372	~~LI-1~~ (44) LI-1 Door frame	GRY		Door caulk
8	40B	373	↓	↓		↓
9	41A	374	LI-1 expansion joint	GRY		pliable sticky expansion caulk
#	41B	375	↓	↓		

Sampled By: Tony Hill **Date:** 2/28/25

Transported to Paradigm By: [signature] **Date:** 3/5/25

Received By: [signature] **Date:** 3.5.25 1710

By signing this form, client agrees to Paradigm Terms and Conditions (reverse).

All samples will be analyzed by the appropriate New York State Department of Health methods (198.1,198.4 and 198.6) unless EPA 600/M4/82/020 per 40 CFR 763 and/or EPA 600/R-93/116 methods are requested.

CHECK TO AUTOMATICALLY PERFORM TEM ON NOBS [x]

or provide TEM contact name:

TOTAL NUMBER OF SAMPLES ON ALL CHAINS OF CUSTODY: [ ]

pg 2 of 3

CHAIN OF CUSTODY FOR BULK ASBESTOS ANALYSIS

Ravi Rates

PARADIGM

[X] 179 Lake Avenue, Rochester, New York 14608 — Office: 585-647-2530
[ ] 1815 Love Road, Grand Island , New York 14072 — Office: 716-775-5777

Client: Ravi Engineering & Land Survey P.C.	**Contact:** Tony Hill	**OFFICE USE ONLY**
Phone Number: (585) 223-3660	**Email Address for Data:** Ahill@ravieng.com	**Job #:** 1899-25
Client Mailing Address: 2110 S. Clinton Ave, Suite 1	**Results To** Tony Hill	**Turn Around Time:** 1 [ ] 2 [ ] 3 [ ] 5 [X] 3-12 Other [ ]	**Page** 6 of 6 9
Rochester, New York 14618	**Date Sampled** 2/28/2025	**Material Type/Quantity:** Friable ___ NOB ___ TEM ___	**Date Logged In:** 3.5.25
Ravi Project # 43-25-238A	**Project Location:** Binghatmon University - Bartle Library Binghamton, New York		**Logged In By:** KLA 3 of 3

	Client ID	Lab ID	Sampling Location	Color	Material Size	Type of Material
1	42A	18376	LI-9 over hang (Do not analyze file or Caulking)	WH		Ceramic tile GROUT
2	42B	377	↓	↓		↓
3	43A	378	↓	GRY		CERAMIC TILE CEMENT
4	43B	379	↓	↓		↓
5						
6						
7						
8						
9						
#						

Sampled By: Tony Hill **Date:** 2/28/25

Transported to Paradigm By: [signature] **Date:** [illegible]

Received By: [signature] **Date:** 3.5.25 1710

By signing this form, client agrees to Paradigm Terms and Conditions (reverse).

All samples will be analyzed by the appropriate New York State Department of Health methods (198.1,198.4 and 198.6) unless EPA 600/M4/82/020 per 40 CFR 763 and/or EPA 600/R-93/116 methods are requested.

CHECK TO AUTOMATICALLY PERFORM TEM ON NOBS [x]
or provide TEM contact name:

TOTAL NUMBER OF SAMPLES ON ALL CHAINS OF CUSTODY:

Pg 3 of 3

ATTACHMENT F

License and Certifications

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton
Replace Storefront Bartle Library
4400 Vestal Parkway East
Binghamton, New York 13902

WE ARE YOUR DOL

NEW YORK STATE | Department of Labor

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

ASBESTOS HANDLING LICENSE

Ravi Engineering and Land Surveying, P.C.
2110 South Clinton Ave., Suite 1, Rochester, NY, 14618

License Number: 29384
License Class: RESTRICTED
Date of Issue: 01/31/2025
Expiration Date: 02/28/2026
Duly Authorized Representative: Nagappa Ravindra

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

STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE

N.Y.S



ANTHONY HILL
CLASS(EXPIRES)
C ATEC (09/25) D INSP (09/25)
H PM (09/25) I PD (09/25)

CERT# 24-6LYFU-SHAB
DMV# 688601121

MUST BE CARRIED ON ASBESTOS PROJECTS

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2026
Issued April 01, 2025

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. STEVE DEVITO
PARADIGM ENVIRONMENTAL SERVICES INC
179 LAKE AVENUE
ROCHESTER, NY 14608

NY Lab Id No: 10958

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

Metals I	
Lead, Total	NIOSH 7303
Miscellaneous	
Asbestos	40 CFR 763 APX A No. III
	NIOSH 7402
Fibers	NIOSH 7400 A RULES
Polychlorinated Biphenyls	
PCBs and Aroclors	NIOSH 5503

Serial No.: 70339

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LIMITED PCB CAULK SURVEY

State University of New York Binghamton
Replace Storefront Bartle Library
4400 Vestal Parkway East
Binghamton, New York 13902



Volume 2 of 2

Prepared For:

QPK Design, LLP
450 South Salina Street
Syracuse, New York 13202

Prepared By:

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618

April 2025

Project No. 43-24-238A

LIMITED PCB CAULK SURVEY

State University of New York Binghamton
Replace Storefront Bartle Library
4400 Vestal Parkway East
Binghamton, New York 13902

Volume 2 of 2

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ATTACHMENT B *ANALYTICAL REPORT AND CHAIN OF CUSTODY FORMS*
ATTACHMENT C *LABORATORY CERTIFICATION*

EXECUTIVE SUMMARY

Ravi Engineering & Land Surveying, P.C. (RE&LS) was retained by QPK Design, LLP (QPK) to conduct a Limited Polychlorinated Biphenyl (PCB) Caulk Survey at State University of New York Binghamton (SUNY Binghamton) Bartle Library, 4400 Vestal Parkway East, Binghamton, New York 13902. The Survey was conducted on February 28, 2025 to support the Replace Storefront renovation project and was limited to the Bartle Library.

The scope of work was based on telephone and electronic correspondence between RE&LS and QPK through August 2024, a pre-bid walkthrough at SUNY Binghamton on July 15, 2024, and the document *SUCF Project Title: Study – Exterior Envelope Investigation – Library and Administration Towers*, dated January 2024.

The Survey included a visual assessment and collection of suspect caulks/sealants that would be impacted by the proposed renovation project. Caulks/sealants were sampled for PCB content to determine if special removal or disposal procedures are required.

The caulks/sealants that were sampled and analyzed for asbestos content (identified in Volume 1 of this report) were also sampled and analyzed for PCBs. Three (3) caulk/sealant samples were collected and submitted to Paradigm Environmental Services, Inc. for PCB analysis. As indicated in Table 1, none of the three (3) samples were determined to be above the regulatory threshold of 50 parts per billion (ppb) PCB for a PCB bulk-product waste.

Table 1 – PCB CAULK SAMPLING RESULTS

Sample Number	Material Description and Location	PCB Total Content (ppm)
39P	Brown Pliable Door Caulk on LG-8 Door Frame	5.81
40P	Gray Door Caulk on LI-1 Door Frame	4.76
41P	Gray Pliable Sticky Expansion Caulk on LI-1 Expansion Joint	7.04

1.0 INTRODUCTION

Ravi Engineering & Land Surveying, P.C. (RE&LS) was retained by QPK Design, LLP (QPK) to conduct a Limited Polychlorinated Biphenyl (PCB) Caulk Survey at State University of New York Binghamton (SUNY Binghamton) Bartle Library, 4400 Vestal Parkway East, Binghamton, New York 13902. The Survey was conducted on February 28, 2025 to support the Replace Storefront renovation project and was limited to the Bartle Library.

2.0 PROJECT OVERVIEW

The Survey was conducted to support the renovation project at SUNY Binghamton. The scope of work was based on telephone and electronic correspondence between RE&LS and QPK through August 2024, a pre-bid walkthrough at SUNY Binghamton on July 15, 2024, and the document *SUCF Project Title: Study – Exterior Envelope Investigation – Library and Administration Towers*, dated January 2024.

3.0 PCB CAULK SAMPLING/FINDINGS

Three (3) caulk/sealant samples were collected and submitted to Paradigm Environmental Services, Inc. (Paradigm) for PCB analysis. A copy of Paradigm's Certification is included in Attachment C. Bulk sample locations are included in Attachment A. Table 1 identifies caulks/sealants that were sampled and analyzed for PCBs along with their sample number, material description, location, and PCB content.

Table 1 – PCB CAULK SAMPLING RESULTS

Sample Number	Material Description and Location	PCB Total Content (ppm)
39P	Brown Pliable Door Caulk on LG-8 Door Frame	5.81
40P	Gray Door Caulk on LI-1 Door Frame	4.76
41P	Gray Pliable Sticky Expansion Caulk on LI-1 Expansion Joint	7.04

Note: The above identified caulks/sealants were also analyzed for asbestos content as identified in Volume 1 of this report.
ppm: Parts per Million

None of the three (3) samples analyzed were found to be above the regulatory threshold for PCB bulk-product waste ($\geq$50 parts per million; ppm). The United States Environmental Protection Agency (USEPA) defines PCB bulk-product waste as "waste derived from manufacturing products containing PCBs in a non-liquid state, at any concentration where the concentration at the time of designation for disposal was $\geq$50 ppm PCB."

4.0 LIMITATIONS OF INVESTIGATION

The Survey was based on the project scope as described in Section 2.0 Project Overview above. Non-destructive sampling techniques were employed during the Survey. Areas that were inaccessible were not sampled nor identified. Suspect caulks/sealants, not identified in this Survey report, discovered during renovation or demolition activities shall be assumed to be PCB-containing until laboratory analysis proves otherwise.

5.0 RECOMMENDATIONS

None of the three (3) caulks/sealants sampled and analyzed were determined to be PCB-containing above the USEPA threshold for bulk product waste.

Suspect caulks/sealants, not identified in this Survey report, discovered during renovation or demolition activities shall be assumed to be PCB-containing until laboratory analysis proves otherwise. Caulks/sealants that are assumed or identified as PCB-containing at or above the regulatory threshold for PCB bulk-product waste shall be removed and disposed of in accordance with 40 CFR Part 761.62.

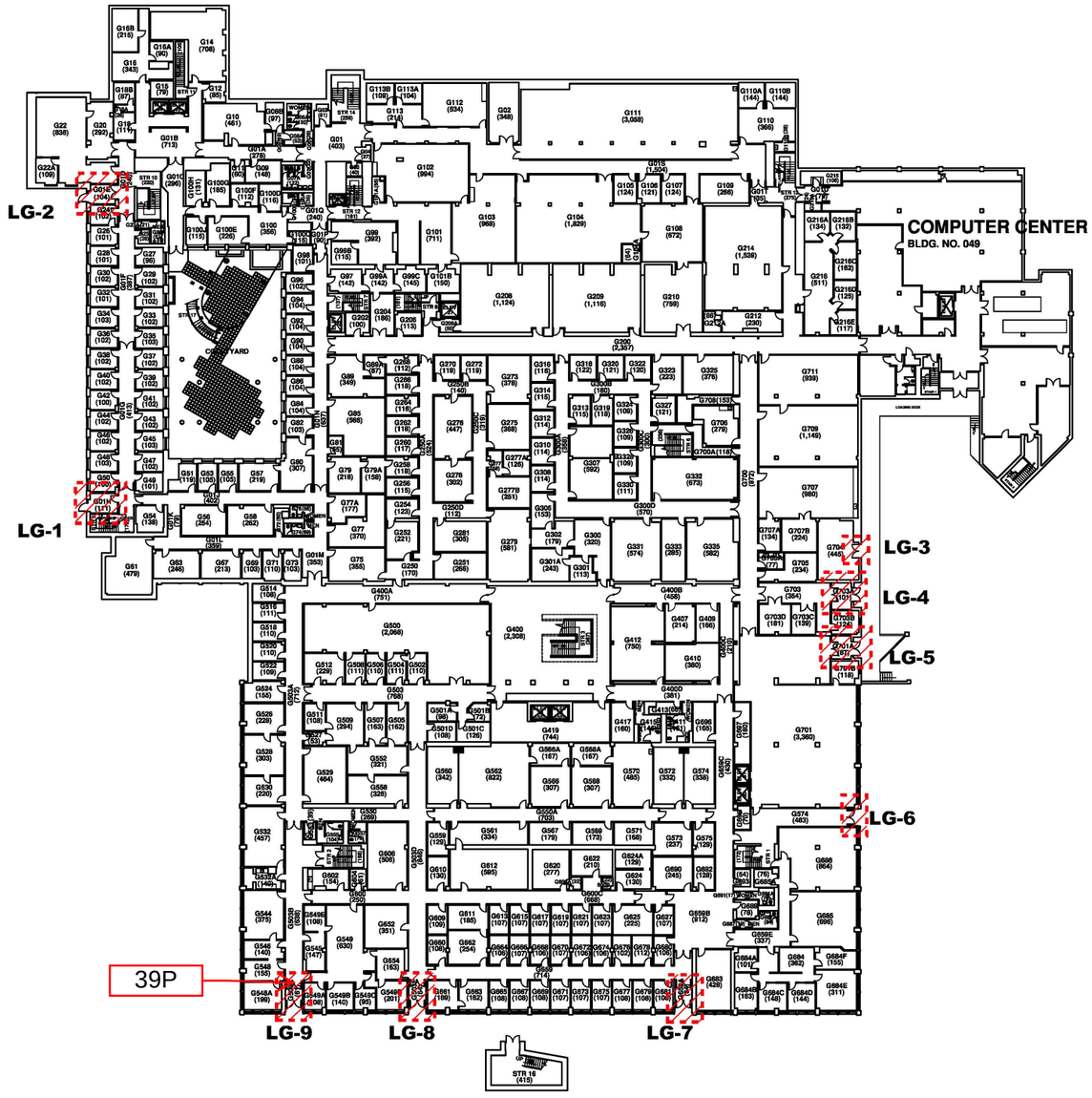
.

ATTACHMENT A

Areas of Inspection/Bulk Sample Location Plans

LIMITED PCB CAULK SURVEY

State University of New York Binghamton
Replace Storefront Bartle Library
4400 Vestal Parkway East
Binghamton, New York 13902



GLENN G. BARTLE LIBRARY
GROUND FLOOR PLAN
BLDG. NO. 004
scale 0 10 20 40 80 feet
09/15

LEGEND
SAMPLE LOCATIONS XX

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618
TL: (585) 223-3660 FX (585) 697-1764

SUNY BINGHAMTON
REPLACE STOREFRONT BARTLE LIBRARY
PCB CAULK SURVEY

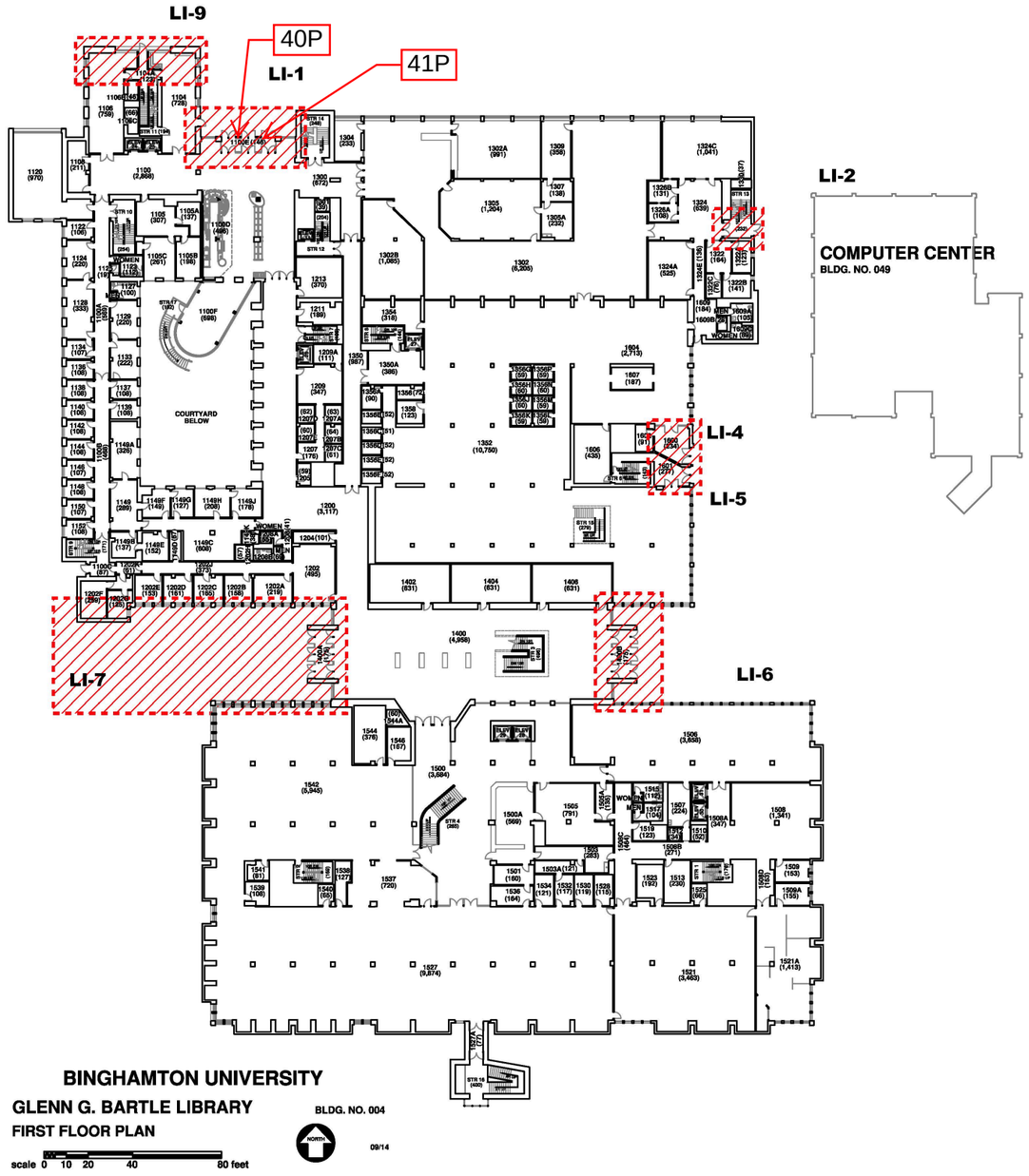
ATTACHMENT A: AREAS OF INSPECTION/BULK SAMPLE LOCATION PLANS

PROJECT NO. 43-24-238A

DATE: APRIL 2025

SCALE: N.T.S.

DRAWING NO: DWG-01



LEGEND
SAMPLE LOCATIONS XX

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618
TL: (585) 223-3660 FX (585) 697-1764

SUNY BINGHAMTON
REPLACE STOREFRONT BARTLE LIBRARY
PCB CAULK SURVEY

ATTACHMENT A: AREAS OF INSPECTION/BULK SAMPLE LOCATION PLANS

PROJECT NO. 43-24-238A

DATE: APRIL 2025

SCALE: N.T.S.

DRAWING NO: DWG-02

ATTACHMENT B

Analytical Report and Chain of Custody Forms

LIMITED PCB CAULK SURVEY

State University of New York Binghamton
Replace Storefront Bartle Library
4400 Vestal Parkway East
Binghamton, New York 13902

PARADIGM

PARADIGM
ENVIRONMENTAL SERVICES, INC

Analytical Report For

Ravi Engineering & Land Surveying, P.C.

For Lab Project ID

250811

Referencing

43-25-238A Binghamton University - Bartle Library

Prepared

Thursday, March 13, 2025

Any noncompliant QC parameters or other notes impacting data interpretation are flagged or documented on the final report or are noted below.

Emily Farmer

Certifies that this report has been approved by the Technical Director or Designee

179 Lake Avenue • Rochester, NY 14608 • (585) 647-2530 • Fax (585) 647-3311 • ELAP ID# 10958

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

PARADIGM
ENVIRONMENTAL SERVICES, INC.

Lab Project ID: 250811

Client: **Ravi Engineering & Land Surveying, P.C.**

Project Reference: 43-25-238A Binghamton University - Bartle Library

Sample Identifier:	39P / LG-9 Door		
Lab Sample ID:	250811-01	**Date Sampled:**	2/28/2025
Matrix:	Caulk	**Date Received**	3/5/2025

PCBs

Analyte	Result	Units	Qualifier	Date Analyzed
PCB-1016	< 2.94	mg/Kg		3/13/2025 12:45
PCB-1221	< 2.94	mg/Kg		3/13/2025 12:45
PCB-1232	< 2.94	mg/Kg		3/13/2025 12:45
PCB-1242	< 2.94	mg/Kg		3/13/2025 12:45
PCB-1248	< 2.94	mg/Kg		3/13/2025 12:45
PCB-1254	**5.81**	mg/Kg		3/13/2025 12:45
PCB-1260	< 2.94	mg/Kg		3/13/2025 12:45
PCB-1262	< 2.94	mg/Kg		3/13/2025 12:45
PCB-1268	< 2.94	mg/Kg		3/13/2025 12:45

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Tetrachloro-m-xylene	**57.9**	16.1 - 102		3/13/2025 12:45

Method Reference(s): EPA 8082A
EPA 3546

Preparation Date: 3/12/2025

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

PARADIGM
ENVIRONMENTAL SERVICES, INC.

Lab Project ID: 250811

Client: **Ravi Engineering & Land Surveying, P.C.**

Project Reference: 43-25-238A Binghamton University - Bartle Library

Sample Identifier: 40P / LI-1 Door
Lab Sample ID: 250811-02 **Date Sampled:** 2/28/2025
Matrix: Caulk **Date Received** 3/5/2025

PCBs

Analyte	Result	Units	Qualifier	Date Analyzed
PCB-1016	< 4.67	mg/Kg		3/10/2025 13:30
PCB-1221	< 4.67	mg/Kg		3/10/2025 13:30
PCB-1232	< 4.67	mg/Kg		3/10/2025 13:30
PCB-1242	< 4.67	mg/Kg		3/10/2025 13:30
PCB-1248	< 4.67	mg/Kg		3/10/2025 13:30
PCB-1254	< 4.67	mg/Kg		3/10/2025 13:30
PCB-1260	**4.76**	mg/Kg		3/10/2025 13:30
PCB-1262	< 4.67	mg/Kg		3/10/2025 13:30
PCB-1268	< 4.67	mg/Kg		3/10/2025 13:30

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Tetrachloro-m-xylene	**39.8**	16.1 - 102		3/10/2025 13:30

Method Reference(s): EPA 8082A
EPA 3546
Preparation Date: 3/10/2025

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

PARADIGM
ENVIRONMENTAL SERVICES, INC.

Lab Project ID: 250811

Client: **Ravi Engineering & Land Surveying, P.C.**

Project Reference: 43-25-238A Binghamton University - Bartle Library

Sample Identifier: 41P / LI-1 Expansion
Lab Sample ID: 250811-03 **Date Sampled:** 2/28/2025
Matrix: Caulk **Date Received** 3/5/2025

PCBs

Analyte	Result	Units	Qualifier	Date Analyzed
PCB-1016	< 3.50	mg/Kg		3/12/2025 22:57
PCB-1221	< 3.50	mg/Kg		3/12/2025 22:57
PCB-1232	< 3.50	mg/Kg		3/12/2025 22:57
PCB-1242	< 3.50	mg/Kg		3/12/2025 22:57
PCB-1248	< 3.50	mg/Kg		3/12/2025 22:57
PCB-1254	**7.04**	mg/Kg		3/12/2025 22:57
PCB-1260	**5.86**	mg/Kg		3/12/2025 22:57
PCB-1262	< 3.50	mg/Kg		3/12/2025 22:57
PCB-1268	< 3.50	mg/Kg		3/12/2025 22:57

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Tetrachloro-m-xylene	**42.8**	16.1 - 102		3/12/2025 22:57

Method Reference(s): EPA 8082A
EPA 3546
Preparation Date: 3/12/2025

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

Analytical Report Appendix

The reported results relate only to the samples as they have been received by the laboratory.

Each page of this document is part of a multipage report. This document may not be reproduced except in its entirety, without the prior consent of Paradigm Environmental Services, Inc.

All soil/sludge samples have been reported on a dry weight basis, unless qualified "reported as received". Other solids are reported as received.

Low level Volatiles blank reports for soil/solid matrix are based on a nominal 5 gram weight. Sample results and reporting limits are based on actual weight, which may be more or less than 5 grams.

The Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt. Sample condition requirements are defined under the 2003 NELAC Standard, sections 5.5.8.3.1 and 5.5.8.3.2.

NYSDOH ELAP does not certify for all parameters. Paradigm Environmental Services or the indicated subcontracted laboratory does hold certification for all analytes where certification is offered by ELAP unless otherwise specified. Aliquots separated for certain tests, such as TCLP, are indicated on the Chain of Custody and final reports with an "A" suffix.

Data qualifiers are used, when necessary, to provide additional information about the data. This information may be communicated as a flag or as text at the bottom of the report. Please refer to the following list of analyte-specific, frequently used data flags and their meaning:

"<" = Analyzed for but not detected at or above the quantitation limit.
"E" = Result has been estimated, calibration limit exceeded.
"H" = Denotes a parameter analyzed outside of holding time.
"Z" = See case narrative.
"D" = Sample, Laboratory Control Sample, or Matrix Spike Duplicate results above Relative Percent Difference limit.
"M" = Matrix spike recoveries outside QC limits. Matrix bias indicated.
"B" = Method blank contained trace levels of analyte. Refer to included method blank report.
"J" = Result estimated between the quantitation limit and half the quantitation limit.
"L" = Laboratory Control Sample recovery outside accepted QC limits.
"P" = Concentration differs by more than 40% between the primary and secondary analytical columns.
"NC" = Not calculable. Applicable to RPD if sample or duplicate result is non-detect or estimated (see primary report for data flags). Applicable to MS if sample is greater or equal to ten times the spike added. Applicable to sample surrogates or MS if sample dilution is 10x or higher.
"" = Indicates any recoveries outside associated acceptance windows. Surrogate outliers in samples are presumed matrix effects. LCS demonstrates method compliance unless otherwise noted.*
"(1)" = Indicates data from primary column used for QC calculation.
"A" = denotes a parameter for which ELAP does not offer approval as part of their laboratory certification program.
"F" = denotes a parameter for which Paradigm does not carry certification, the results for which should therefore only be used where ELAP certification is not required, such as personal exposure assessment.

GENERAL TERMS AND CONDITIONS
LABORATORY SERVICES

These Terms and Conditions embody the whole agreement of the parties in the absence of a signed and executed contract between the Laboratory (LAB) and Client. They shall supersede all previous communications, representations, or agreements, either verbal or written, between the parties. The LAB specifically rejects all additional, inconsistent, or conflicting terms, whether printed or otherwise set forth in any purchase order or other communication from the Client to the LAB. The invalidity or unenforceability in whole or in part of any provision, term or condition hereof shall not affect in any way the validity or enforceability of the remainder of the Terms and Conditions. No waiver by LAB of any provision, term, or condition hereof or of any breach by or obligation of the Client hereunder shall constitute a waiver of such provision, term, or condition on any other occasion or a waiver of any other breach by or obligation of the Client. This agreement shall be administered and interpreted under the laws of the state which services are procured.

Warranty. Recognizing that the nature of many samples is unknown and that some may contain potentially hazardous components, LAB warrants only that it will perform testing services, obtain findings, and prepare reports in accordance with generally accepted analytical laboratory principles and practices at the time of performance of services. LAB makes no other warranty, express or implied.

Scope and Compensation. LAB agrees to perform the services described in the chain of custody to which these terms and conditions are attached. Unless the parties agree in writing to the contrary, the duties of LAB shall not be construed to exceed the services specifically described. LAB wi use LAB default method for all tests unless specified otherwise on the Work Order.
Payment terms are net 30 days from the date of invoice. All overdue payments are subject to an interest charge of one and one-half percent (1-1/2%) per month or a portion thereof. Client shall also be responsible for costs of collection, including payment of reasonable attorney fees if such expense is incurred. The prices, unless stated, do not include any sale, use or other taxes. Such taxes will be added to invoice prices when required.

Prices. Compensation for services performed will be based on the current Lab Analytical Fee Schedule or on quotations agreed to in writing by the parties. Turnaround time based charges are determined from the time of resolution of all work order questions. Testimony, court appearances or data compilation for legal action will be charged separately. Evaluation and reporting of initial screening runs may incur additional fees.

Limitations of Liability. In the event of any error, omission, or other professional negligence, the sole and exclusive responsibility of LAB shall be to re-perform the deficient work at its own expense and LAB shall have no other liability whatsoever. All claims shall be deemed waived unless made in writing and received by LAB within ninety (90) days following completion of services.
LAB shall have no liability, obligation, or responsibility of any kind for losses, costs, expenses, or other damages (including but not limited to any special, direct, incidental or consequential damages) with respect to LAB's services or results.
All results provided by LAB are strictly for the use of its clients and LAB is in no way responsible for the use of such results by clients or third parties. All reports should be considered in their entirety, and LAB is not responsible for the separation, detachment, or other use of any portion of these reports. Client may not assign the lab report without the written consent of the LAB.
Client covenants and agrees, at its/his/her sole expense, to indemnify, protect, defend, and save harmless the LAB from and against any and all damages, losses, liabilities, obligations, penalties, claims, litigation, demands, defenses, judgments, suits, actions, proceedings, costs, disbursements and/or expenses (including, without limitation attorneys' and experts' fees and disbursements) of any kind whatsoever which may at any time be imposed upon, incurred by or asserted or awarded against client relating to, resulting from or arising out of (a) the breach of this agreement by this client, (b) the negligence of the client in handling, delivering or disclosing any hazardous substance, (c) the violation of the Client of any applicable law, (d) non-compliance by the Client with any environmental permit or (e) a material misrepresentation in disclosing the materials to be tested.

Hazard Disclosure. Client represents and warrants that any sample delivered to LAB will be preceded or accompanied by complete written disclosure of the presence of any hazardous substances known or suspected by Client. Client further warrants that any sample containing any hazardous substance that is to be delivered to LAB will be packaged, labeled, transported, and delivered properly and in accordance with applicable laws.

Sample Handling. Prior to LAB's acceptance of any sample (or after any revocation of acceptance), the entire risk of loss or of damage to such sample remains with Client. Samples are accepted when receipt is acknowledged on chain of custody documentation. In no event will LAB have any responsibility for the action or inaction of any carrier shipping or delivering any sample to or from LAB premises.
Client authorizes LAB to proceed with the analysis of samples as received by the laboratory, recognizing that any samples not in compliance with all current DOH-ELAP-NELAP requirements for containers, preservation or holding time will be noted as such on th final report.
Disposal of hazardous waste samples is the responsibility of the Client. If the Client does not wish such samples returned, LAB may add storage and disposal fees to the final invoice. Maximum storage time for samples is 30 days after completion of analysis unless modified by applicable state or federal laws. Client will be required to give the LAB written instructions concerning disposal of these samples.
LAB reserves the absolute right, exercisable at any time, to refuse to receive delivery of, refuse to accept, or revoke acceptance of any sample, which, in the sole judgment of LAB (a) is of unsuitable volume, (b) may be or become unsuitable for or may pose a risk in handling, transport, or processing for any health, safety, environmental or other reason whether or not due to the presence in the sample of any hazardous substance, and whether or not such presence has been disclosed to LAB by Client or (c) if the condition or sample date make the sample unsuitable for analysis.

Legal Responsibility. LAB is solely responsible for performance of this contract, and no affiliated company, director, officer, employee, or agent shall have any legal responsibility hereunder, whether in contract or tort including negligence.

Assignment. LAB may assign its performance obligations under this contract to other parties, as it deems necessary. LAB shall disclose to Client any assignee (subcontractor) by ELAP ID # on the submitted final report.

Force Majeure. LAB shall have no responsibility or liability to the Client for any failure or delay in performance by LAB, which results in whole or in part from any cause or circumstance beyond the reasonable control of LAB. Such causes and circumstances shall include, but not limited to, acts of God, acts or orders of any government authority, strikes or other labor disputes, natural disasters, accidents, wars, civil disturbances, difficulties or delays in transportation, mail or delivery services, inability to obtain sufficient services or supplies from LAB's usual suppliers, or any other cause beyond LAB's reasonable control.

Law. This contract shall be continued under the laws of the State of New York without regard to its conflicts of laws provision.

1 of 2

179 Lake Avenue, Rochester, NY 14608 Office (585) 647-2530 Fax (585) 647-3311

CHAIN OF CUSTODY

250811

PARADIGM ENVIRONMENTAL SERVICES, INC

REPORT TO:		INVOICE TO:			
COMPANY:	Ravi Engineering & Land Surveying, P.C	COMPANY:	Same	LAB PROJECT #:	CLIENT PROJECT #: 43-25-238A
ADDRESS:	2110 South Clinton Avenue, Suite 1	ADDRESS:			
CITY:	Rochester STATE: NY ZIP: 14618	CITY:	STATE: ZIP:	TURNAROUND TIME: (WORKING DAYS)	
PHONE:	(585) 223-3660 FAX: (585) 223-4250	PHONE:	FAX:		STD: X 5 / OTHER: 1 2 3
ATTN:	Tony Hill	ATTN:	Tony Hill		
COMMENTS:	Email results to ahilll@ravieng.com			Quotation #: Ravi Rates	

PROJECT NAME/SITE NAME:
Binghamton University - Bartle Library
Binghamton, New York

REQUESTED ANALYSIS

	DATE	TIME	COMPOSITE	GRAB	SAMPLE LOCATION/FIELD ID	MATRIX	NUMBER OF CONTAINERS	PCBs	REMARKS	PARADIGM LAB SAMPLE NUMBER
1	2/28/25				39P/LG-9 Door	CK	1	X		-01
2					40P/LI-1 Door	↓	↓	↓		-02
3					41P/LI-1 Expansion	↓	↓	↓		-03
4										
5										
6										
7										
8										
9										
10										

LAB USE ONLY BELOW THIS LINE

Sample Condition: Per NELAC/ELAP 210/241/242/243/244

Receipt Parameter	NELAC Compliance	
Container Type:	Y ☐	N ☐
Comments:		
Preservation:	Y ☐	N ☐
Comments:		
Holding Time:	Y ☐	N ☐
Comments:		
Temperature:	Y ☐	N ☐
Comments: 22°C 3/5/25 17:03		

Tony Hill — Sampled By — 2/28/25 Date/Time

Relinquished By — Date/Time

Received By — Date/Time

Received @ Lab By — 3/5/2025 1706 Date/Time

Total Cost:

P.I.F.

PARADIGM

Chain of Custody Supplement

Client: RAVI

Completed by:

Lab Project ID: 250811

Date: 3/5/2025

Sample Condition Requirements

Per NELAC/ELAP 210/241/242/243/244

Condition	NELAC compliance with the sample condition requirements upon receipt: Yes	No	N/A
Container Type	☑	☐	☐
Comments			
Transferred to method-compliant container	☐	☐	☑
Headspace (<1 mL)	☐	☐	☑
Comments			
Preservation	☐	☐	☑
Comments			
Chlorine Absent (<0.10 ppm per test strip)	☐	☐	☑
Comments			
Holding Time	☑	☐	☐
Comments			
Temperature	☐	☑	☐
Comments	21 °C		
Compliant Sample Quantity/Type	☒	☐	☐
Comments			

ATTACHMENT C

Laboratory Certification

LIMITED PCB CAULK SURVEY

State University of New York Binghamton
Replace Storefront Bartle Library
4400 Vestal Parkway East
Binghamton, New York 13902

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2026
Issued April 01, 2025

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. STEVE DEVITO
PARADIGM ENVIRONMENTAL SERVICES INC
179 LAKE AVENUE
ROCHESTER, NY 14608

NY Lab Id No: 10958

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

Metals I	
Lead, Total	NIOSH 7303
Miscellaneous	
Asbestos	40 CFR 763 APX A No. III
	NIOSH 7402
Fibers	NIOSH 7400 A RULES
Polychlorinated Biphenyls	
PCBs and Aroclors	NIOSH 5503

Serial No.: 70339

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

LIMITED PRE-RENOVATION HAZARDOUS MATERIAL INSPECTION

State University of New York Binghamton University
University Union
4400 Vestal Parkway East
Binghamton, New York 13902



Prepared For:

QPK Design, LLP
450 South Salina Street
Suite 225
Binghamton, NY 13202

Prepared By:

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618

April 2025

Project No. 43-24-238A

Preface

A Limited Hazardous Materials Inspection consisting of a Limited Pre-Renovation Asbestos Survey/Inspection and a Limited Polychlorinated Biphenyl (PCB) Caulk Survey has been completed at the State University of New York (SUNY) Binghamton University Union, 4400 Vestal Parkway East, Binghamton, New York. The results of the Survey/Inspections are included in this report and are presented in two volumes, namely:

Volume 1 of 2: Limited Pre-Renovation Asbestos Survey/Inspection

Volume 2 of 2: Limited PCB Caulk Survey

Prepared by:

Holley Chamberlin
Environmental Scientist
Ravi Engineering & Land Surveying, P.C.

Reviewed by:

Benjamin Reddy
Environmental Department Manager
Ravi Engineering & Land Surveying, P.C.

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton University
University Union
4400 Vestal Parkway East
Binghamton, New York 13902

Volume 1 of 2

Prepared For:

QPK Design, LLP
450 South Salina Street
Syracuse, NY 13202

Prepared By:

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618

April 2025

Project No. 43-24-238A

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton University
University Union
4400 Vestal Parkway East
Binghamton, New York 13902

Volume 1 of 2

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ATTACHMENT C *ASBESTOS CONTAINING MATERIALS SUMMARY TABLE*
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ATTACHMENT F *LICENSE AND CERTIFICATION*

EXECUTIVE SUMMARY

Ravi Engineering & Land Surveying, P.C. (RE&LS) was retained by QPK Design, LLP to conduct a Limited Pre-Renovation Asbestos Survey/Inspection at the State University of New York (SUNY) Binghamton University Union, 4400 Vestal Parkway East, Binghamton, New York. The Survey/Inspection was conducted on February 28, 2025.

The Survey/Inspection was conducted to support the SUNY Binghamton University Union renovation project at SUNY Binghamton University. The scope of work was based on telephone and electronic correspondence between RE&LS and QPK through August 2024, a pre-bid walkthrough at SUNY Binghamton on July 15, 2024, and the document titled "SUCF Project Title: Replace Storefront Bartle Library, University Union, Administration". The Survey/Inspection was limited to University Union Storefront

TABLE 1 – ASBESTOS SUMMARY TABLE

ASBESTOS-CONTAINING MATERIALS AND LOCATIONS
Gray Window Glazing Compound – UU-14 Sidelite Glass/UU-15 Sidelite Glass
Gray Crumbly Window Caulk – Loading Dock Window Glass
NON ASBESTOS-CONTAINING MATERIALS
Light Gray Window Caulk
Black Window Glazing Compound
Black Window Caulk
White Rigid Window Glazing Compound
Gray Door Caulk
Light Gray Pliable Window Caulk
White Gypsum Board
White Joint Compound
White Terrazzo
White Plaster
Gray Plaster
White/Gray Mottled 12"x12" Floor Tile
Tan Floor Tile Mastic
Gray Fibrous Suspended Acoustical Ceiling Tile
Gray Door Caulk

Asbestos-containing materials (ACMs) have been identified in the proposed renovation areas. Locations of ACMs are shown on the Asbestos Location Plans in Attachment B.

No demolition, renovation, remodeling, or repair work shall commence by any owner or owner's agent in areas where ACMs and/or assumed ACMs exist prior to the completion of asbestos abatement. The Construction Manager shall notify all subcontractors of the presence and locations of ACMs, assumed ACM, and suspect ACMs consistent with Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1926.1101. Suspect ACMs, not identified in this Survey/Inspection, discovered during renovation or demolition activities shall be assumed to contain asbestos until laboratory analysis proves otherwise.

1.0 INTRODUCTION

Ravi Engineering & Land Surveying, P.C. (RE&LS) was retained by QPK Design, LLP (QPK) to conduct a Limited Pre-Renovation Asbestos Survey/Inspection at the State University of New York (SUNY) Binghamton University Union. A Certified Asbestos Inspector assessed for suspect asbestos-containing building materials that may be impacted by the proposed renovation project to determine the presence, location, quantity, and condition of asbestos-containing materials (ACMs). The Survey/Inspection was conducted on February 28, 2025.

2.0 PROJECT OVERVIEW

The Survey/Inspection was conducted to support the SUNY Binghamton University Union renovation project at SUNY Binghamton University. The scope of work was based on telephone and electronic correspondence between RE&LS and QPK through August 2024, a pre-bid walkthrough at SUNY Binghamton on July 15, 2024, and the document titled "SUCF Project Title: Replace Storefront Bartle Library, University Union, Administration". The Survey/Inspection was limited to the University Union doors proposed for renovation.

3.0 RECORD REVIEW

No previous sampling data was available for review at the time of the Survey/Inspection.

4.0 SITE INSPECTION

The Survey/Inspection began with a visual assessment to identify homogeneous areas (HAs) that exist within the proposed renovation areas. The United States Environmental Protection Agency (USEPA) Asbestos Hazard Emergency Response Act (AHERA) regulations define an HA as, "…an area of surfacing material, thermal system insulation material, or miscellaneous material that is uniform in color and texture." Further, HAs should be collected from each construction vintage (age) independently, even if newly constructed.

The Inspectors identified HAs that were present in each inspected location. Each HA was given a number corresponding to the identified material. HA numbers used by RE&LS in this Survey/Inspection were given the following alpha-numeric coding:

1A	Homogeneous Area Number 1, sample A (A, B, C, etc. refer to the total amount of samples collected for that HA based on AHERA sampling protocol)

Given this alpha-numeric coding, sample 1A can be identified as: *Light Gray Window Caulk*, first sample. The areas of inspection applicable to this report are shown on the Sample Location Plans in Attachment A. HA numbers used for asbestos bulk sampling are listed in Table 2.

Seventeen (17) HAs, based on color, texture, date of construction and historical laboratory data were identified, of which thirty-six (36) samples were collected and submitted to Paradigm Environmental Services, Inc. (Paradigm) for asbestos analysis.

TABLE 2 – HOMOGENEOUS AREAS

Homogeneous Area No. (HA)	Material Description
1	Light Gray Window Caulk
2	Black Window Glazing Compound
3	Black Window Caulk
4	Gray Crumbly Window Caulk
5	White Rigid Window Glazing Compound
6	Gray Door Caulk
7	Light Gray Pliable Window Caulk
8	White Gypsum Board
9	White Joint Compound
10	White Terrazzo
11	White Plaster
12	Gray Plaster
13	White/Gray Mottled 12”x12”
14	Tan Floor Tile Mastic
15	Gray Fibrous Suspended Acoustical Ceiling Tile
16	Gray Door Caulk
17	Gray Window Glazing Compound

5.0 ASBESTOS BULK SAMPLING

RE&LS is a New York State Licensed Asbestos Contractor employing New York State Department of Health (NYSDOH)/USEPA Certified Asbestos Inspectors. Asbestos bulk sampling procedures were performed in compliance with all applicable Occupational Safety and Health Administration (OSHA), USEPA, and New York State (NYS) sampling protocols.

Bulk sample analysis was performed by Paradigm, an NYSDOH-approved laboratory. Friable samples were analyzed using NYS Environmental Laboratory Approval Program (ELAP) Method EPA 600/M4/82/020 Polarized Light Microscopy (PLM). Non-friable organically bound (NOB) samples were analyzed using NYS ELAP Method 198.6 PLM and, if found to be less than or equal to 1% asbestos by weight, NYS ELAP Method 198.4 Transmission Electron Microscopy (TEM). A copy of Paradigm’s Certification is included in Attachment F.

6.0 ASBESTOS-CONTAINING MATERIALS AND LOCATIONS

ACMs exist within the proposed renovation areas.

Table 3 identifies materials determined to be ACMs along with their description, sample number, asbestos content, and approximate quantity. Locations of ACMs are shown on the Asbestos Location Plans in Attachment A.

TABLE 3 – ASBESTOS CONTAINING MATERIAL

Homogeneous Area No. (HA)	Material Description and Location	Sample Number	Asbestos Content and Type of Analysis	Approximate Quantity
4	Gray Window Caulk – Loading Dock Window Frame	4A 4B	2.7% Chrysotile – PLM 3.6% Chrysotile – PLM	10 SF
17	Gray Window Glazing Compound UU-14/15 Sidelite Glass	17A 17B	1.5% Chrysotile – TEM 2.4% Chrysotile – TEM	10 SF

PLM: Polarized Light Microscopy
TEM: Transmission Electron Microscopy
SF: Square Feet

7.0 LIMITATIONS OF THE INVESTIGATION

The Survey/Inspection included the spaces outlined in Section 2.0 Project Overview above. Suspect ACMs, not identified in this Survey/Inspection report, discovered during demolition or renovation activities shall be assumed to contain asbestos until laboratory analysis proves otherwise.

8.0 CONCLUSIONS

A Limited Pre-Renovation Asbestos Survey/Inspection was conducted at SUNY Binghamton, 4400 Vestal Parkway East, Binghamton, New York 13902 to support the University Union renovation project. The Survey/Inspection was based on the scope items as described in Section 2.0 Project Overview above.

ACMs have been identified in the proposed renovation areas. Locations of ACMs are shown on the Asbestos Location Plans in Attachment B.

No demolition, renovation, remodeling, or repair work shall commence by any owner or owner's agent in areas where ACMs and/or suspect ACMs exist prior to the completion of asbestos abatement. The Construction Manager shall notify all subcontractors of the presence and locations of ACMs and suspect ACMs consistent with OSHA regulation 29 CFR 1926.1101. Suspect ACMs, not identified in this Survey/Inspection report, discovered during renovation or demolition activities shall be assumed to contain asbestos until laboratory analysis proves otherwise.

ATTACHMENT A

Areas of Inspection/Bulk Sample Location Plans

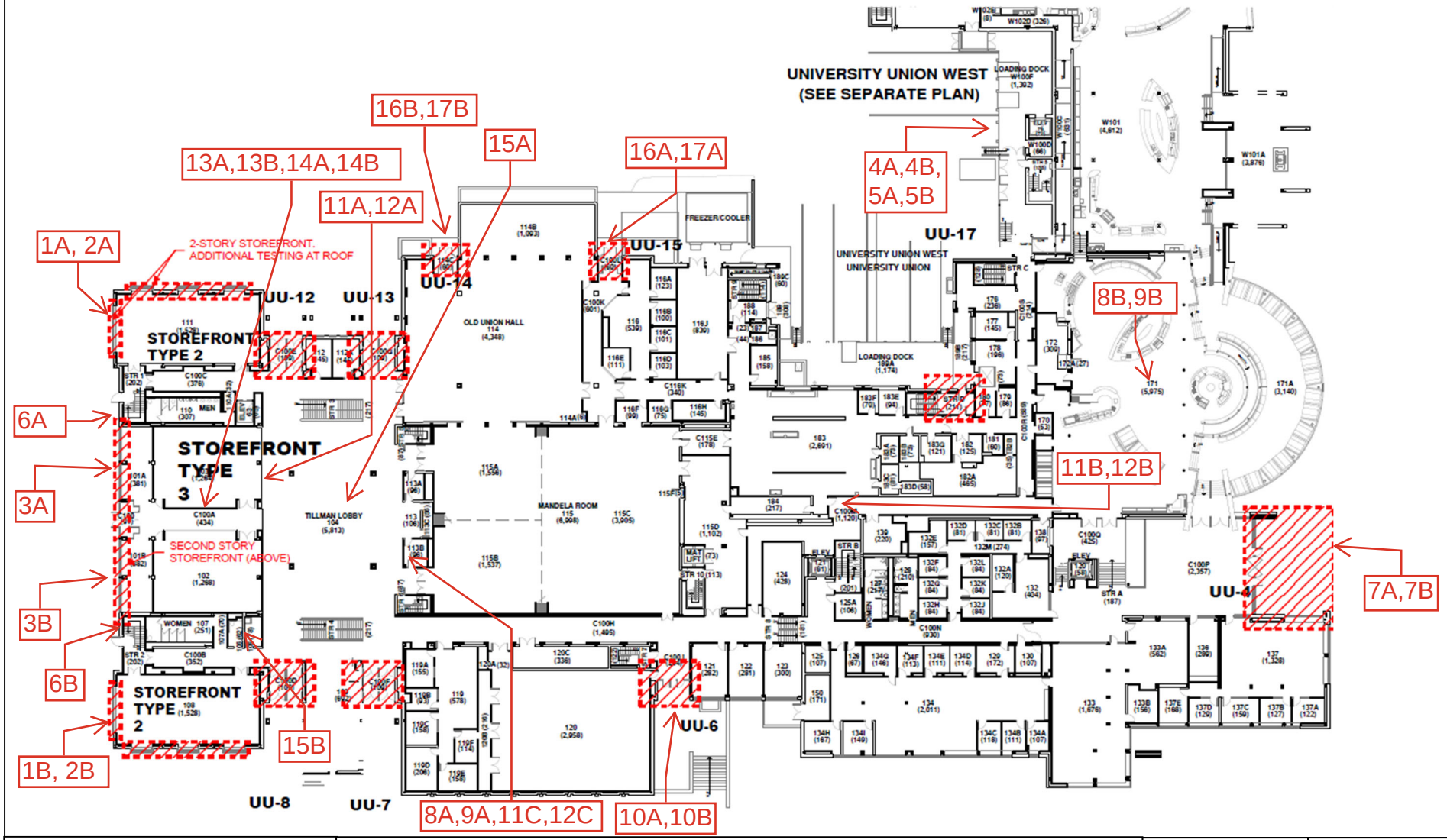
LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton University

University Union

4400 Vestal Parkway East

Binghamton, New York 13902



RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618
TL: (585) 223-3660 FX (585) 697-1794

SUNY BINGHAMTON UNIVERSITY, UNIVERSITY UNION
4400 VESTAL PARKWAY EAST, BINGHAMTON NEW YORK
LIMITED ASBESTOS SURVEY

PROJECT NO.	DATE:
43-24-238-A	MAY 2025

ATTACHMENT A: AREAS OF INSPECTION/BULK SAMPLE LOCATION PLANS

SCALE:	DRAWING NO:
N.T.S.	1

ATTACHMENT B

Asbestos Containing Materials Location Plans

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton University

University Union

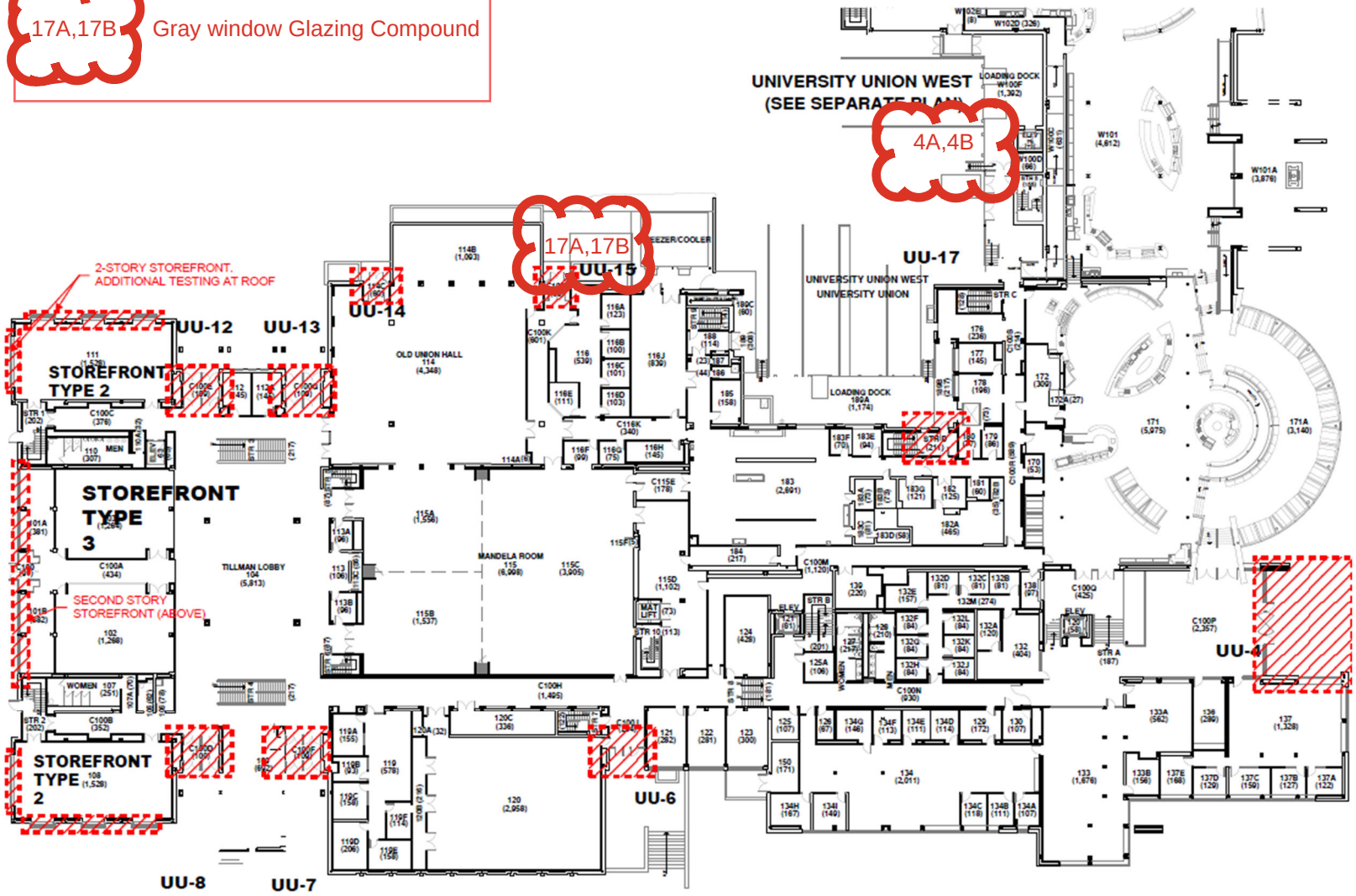
4400 Vestal Parkway East

Binghamton, New York 13902

Legend:

4A,4B Gray Window Caulk

17A,17B Gray window Glazing Compound



RAVI ENGINEERING & LAND SURVEYING, P.C. 2110 S. Clinton Avenue Rochester, NY 14618 TL: (585) 223-3660 FX (585) 697-1794	**SUNY BINGHAMTON UNIVERSITY, UNIVERSITY UNION** **4400 VESTAL PARKWAY EAST, BINGHAMTON NEW YORK** **LIMITED ASBESTOS SURVEY**	PROJECT NO. 43-24-238-A	DATE: MAY 2025
	LIMITED PRE-RENO ASBESTOS BULK SAMPLING/SURVEY LOCATIONS	SCALE: N.T.S.	DRAWING NO: 1

ATTACHMENT C

Asbestos Containing Materials Summary Table

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton University

University Union

4400 Vestal Parkway East

Binghamton, New York 13902

Asbestos-Containing Materials Summary Table						
Homogeneous Area No. (HA)	**Homogeneous Area Description**	**Location**	**Sample Numbers**	**Asbestos Content and Type of Analysis**	**Approximate Quantity**	**Note on Asbestos Location Plans (Attachment B)**
4	Gray Window Caulk	Loading Dock Window Frame	4A 4B	Chrysotile 2.7% PLM Chrysotile 3.6% PLM	10 SF	4
17	Gray Glazing Compound	UU-15/UU-14 Sidelite Glass	17A 17B	Chrysotile 1.5% TEM Chrysotile 2.4% TEM	10 SF	17

PLM: Polarized Light Microscopy
TEM: Transmission Electron Microscopy
SF: Square Feet

ATTACHMENT D

Asbestos Containing Materials Photo log

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton University

University Union

4400 Vestal Parkway East

Binghamton, New York 13902

Asbestos-Containing Materials Photo Log
SUNY Binghamton – University Union

Photo 1	
HA# 4 GRAY WINDOW CAULK 2.7 % CHRYSOTILE - PLM 3.6 % CHRYSOTILE - PLM	

Photo 2	
HA# 17 GRAY WINDOW GLAZING COMPOUND 1.5% CHRYSOTILE - PLM 2.4% CHRYSOTILE - PLM	

ATTACHMENT E

Analytical Reports and Chain of Custody Forms

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton University

University Union

4400 Vestal Parkway East

Binghamton, New York 13902

PARADIGM
ENVIRONMENTAL SERVICES

179 Lake Avenue, Rochester, NY 14608 Office: (585) 647-2530

PLM & TEM BULK ASBESTOS ANALYSIS REPORT
via NYSDOH ELAP Method 198.1,198.4 and 198.6

Client: Ravi Engineering & Land Surveying, P.C.
Location: Binghamton University - Union
Binghamton, New York
Sample Date: 11/19/2024

Job No: 9215-24
Page: 1 of 4

Client ID	Lab ID	Sampling Location	Description	PLM Asbestos Fibers Type & Percentage	PLM Total Asbestos	NOB	TEM Asbestos Fibers Type & Percentage	TEM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage	Non-Fibrous Matrix Material %
1-A	80769	South Elevation Window (Left)	Light Gray Window Caulk	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
1-B	80770	South Elevation Window (Right)	Light Gray Window Caulk	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
2-A	80771	South Elevation Window (Left)	Black Window Glazing Compound	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
2-B	80772	South Elevation Window (Right)	Black Window Glazing Compound	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
3-A	80773	South Elevation Entry Sidelite Frame	Black Window Caulk	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
3-B	80774	South Elevation Entry Sidelite Frame	Black Window Caulk	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
4-A	80775	Loading Dock Window Frame	Gray Crumbly Window Caulk	Chrysotile 2.7%	2.7%	#	Not Required	N/A	None Detected	97.3%
4-B	80776	Loading Dock Window Frame	Gray Crumbly Window Caulk	Chrysotile 3.6%	3.6%	#	Not Required	N/A	None Detected	96.4%
5-A	80777	Loading Dock Window Glass	White Rigid Window Glazing Compound	Inconclusive No Asbestos Detected	0%	#	None Detected	<1.0%	None Detected	100%
5-B	80778	Loading Dock Window Glass	White Rigid Window Glazing Compound	Inconclusive No Asbestos Detected	0%	#	None Detected	<1.0%	None Detected	100%

KEY TO NOB COLUMN SYMBOLS
No Symbol in the NOB column denotes sample analyzed by ELAP Method 198.1 (PLM).
√ NOB (non-friable organically bound)denotes material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
Ṽ denotes material analyzed by ELAP Method 198.6 (PLM) per NYSDOH. This Method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite.
 # denotes friable material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
X denotes sample prepped only by ELAP Method 198.6.
**** Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.**

PLM Bulk Asbestos Analysis by New York State Department of Health, ELAP Method 198.1 ,198.4 and 198.6 ("Polarized Light Microscopy and Transmission Electron Microscopy Methods for Identifying and Quantitating Asbestos in Bulk Samples and in Non-Friable Organically Bound Bulk Samples.")or EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab Code 200530-0).

NVLAP TESTING

ELAP ID No.: 10958

Lab Code 200530-0 for PLM Analysis

Microscope: Olympus BH-2 #211874
PLM Analyst: T. Bush
Date of Analysis: 12/4/2024

Microscope: JEOL-100CX-II #EM-156094-87
TEM Analyst: F. Weinman
Date of Analysis: 12/5/2024

Laboratory Results Approved By:
Asbestos Technical Director or Designee
Fernanda Weinman

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PARADIGM
ENVIRONMENTAL SERVICES

179 Lake Avenue, Rochester, NY 14608 Office: (585) 647-2530

PLM & TEM BULK ASBESTOS ANALYSIS REPORT
via NYSDOH ELAP Method 198.1,198.4 and 198.6

Client: Ravi Engineering & Land Surveying, P.C.
Location: Binghamton University - Union
Binghamton, New York
Sample Date: 11/19/2024

Job No: 9215-24

Client ID	Lab ID	Sampling Location	Description	PLM Asbestos Fibers Type & Percentage	PLM Total Asbestos	NOB	TEM Asbestos Fibers Type & Percentage	TEM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage	Non-Fibrous Matrix Material %
6-A	80779	South Elevation Single Door Frame (Left)	Gray Door Caulk	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
6-B	80780	South Elevation Single Door Frame (Right)	Gray Door Caulk	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
7-A	80781	North Elevation Sidelite Frame	Light Gray Pliable Window Caulk	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
7-B	80782	North Elevation Sidelite Frame	Light Gray Pliable Window Caulk	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%

KEY TO NOB COLUMN SYMBOLS
No Symbol in the NOB column denotes sample analyzed by ELAP Method 198.1 (PLM).
√ NOB (non-friable organically bound)denotes material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
V̈ denotes material analyzed by ELAP Method 198.6 (PLM) per NYSDOH. This Method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite.
 # denotes friable material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
X denotes sample prepped only by ELAP Method 198.6.
**** Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.**

PLM Bulk Asbestos Analysis by New York State Department of Health, ELAP Method 198.1 ,198.4 and 198.6 ("Polarized Light Microscopy and Transmission Electron Microscopy Methods for Identifying and Quantitating Asbestos in Bulk Samples and in Non-Friable Organically Bound Bulk Samples.")or EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab Code 200530-0).

NVLAP TESTING

ELAP ID No.: 10958

Lab Code 200530-0 for PLM Analysis

Microscope: Olympus BH-2 #211874
PLM Analyst: T. Bush
Date of Analysis: 12/4/2024

Microscope: JEOL-100CX-II #EM-156094-87
TEM Analyst: F. Weinman
Date of Analysis: 12/5/2024

Laboratory Results Approved By: Fernanda Weinman
Asbestos Technical Director or Designee

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CHAIN OF CUSTODY FOR BULK ASBESTOS ANALYSIS

PARADIGM

[X] 179 Lake Avenue, Rochester, New York 14608 — Office: 585-647-2530
[ ] 1815 Love Road, Grand Island , New York 14072 — Office: 716-775-5777

Ravi Rates

Client: Ravi Engineering & Land Survey P.C.	**Contact:** Tony Hill	**OFFICE USE ONLY**
Phone Number: (585) 223-3660	**Email Address for Data:** Ahill@ravieng.com	**Job #:** 9215-24
Client Mailing Address: 2110 S. Clinton Ave, Suite 1	**Results To** Tony Hill	**Turn Around Time:** 1 [ ] 2 [ ] 3 [ ] 5 [X] 1205 Other [ ] — **Page** 3 **of** 4
Rochester, New York 14618	**Date Sampled** 11/19/2024	**Material Type/Quantity:** Friable ___ NOB ___ TEM ___ — **Date Logged In:** 11.26.24
Ravi Project # 43-24-238	**Project Location:** Binghamton University - Union Binghamton, New York	**Logged In By:** KA 1 of 2

	Client ID	Lab ID	Sampling Location	Color	Material Size	Type of Material
1	1A	80769	S. Elevation window (left)	Lt. GRY		Window Caulk
2	1B	770	" "(Right)	↓		↓
3	2A	771	" "(left)	BLK		window glazing compound
4	2B	772	" "(Right)	BLK		↓
5	3A	773	S. Elevation Entry sidelite Frame	BLK		Window Caulk
6	3B	774	↓	↓		↓
7	4A	775	Loading dock window frame	GRY		Crumbly window caulk
8	4B	776	↓	↓		↓
9	5A	777	Loading dock window to include glass	WH		Rigid window glazing compound
#	5B	778	↓	↓		↓

Sampled By:	**Date:** 11/19/24
Transported to Paradigm By:	**Date:** 11/26/24
Received By:	**Date:** 11.26.24 1530

By signing this form, client agrees to Paradigm Terms and Conditions (reverse).

All samples will be analyzed by the appropriate New York State Department of Health methods (198.1,198.4 and 198.6) unless EPA 600/M4/82/020 per 40 CFR 763 and/or EPA 600/R-93/116 methods are requested.

CHECK TO AUTOMATICALLY PERFORM TEM ON NOBS or provide TEM contact name:	X
TOTAL NUMBER OF SAMPLES ON ALL CHAINS OF CUSTODY:	

Pg 1 of 2

CHAIN OF CUSTODY FOR BULK ASBESTOS ANALYSIS

PARADIGM

Ravi Rates

[X] 179 Lake Avenue, Rochester, New York 14608 — Office: 585-647-2530
[ ] 1815 Love Road, Grand Island , New York 14072 — Office: 716-775-5777

Client: Ravi Engineering & Land Survey P.C.	**Contact:** Tony Hill
Phone Number: (585) 223-3660	**Email Address for Data:** Ahill@ravieng.com
Client Mailing Address: 2110 S. Clinton Ave, Suite 1 Rochester, New York 14618	**Results To** Tony Hill
	Turn Around Time: 1 [ ] 2 [ ] 3 [ ] 5 [X] 12.5 Other [ ]
	Date Sampled 11/19/2024
	Material Type/Quantity: Friable ___ NOB ___ TEM ___
Ravi Project # 43-24-238	**Project Location:** Binghamton University - Union, Binghamton, New York

OFFICE USE ONLY
Job #: 9215-24
Page 4 **of** 4 c
Date Logged In: 11.26.24
Logged In By: KA 2 of 2

	Client ID	Lab ID	Sampling Location	Color	Material Size	Type of Material
1	6A	80779	S. Elevation Single door frame (left)	GRY		Door Caulk
2	6B	780	" (Right)	↓		↓
3	7A	781	N. Elevation sidelite frame	Lt GRY		Pliable window caulk
4	7B	782	↓	↓		↓
5						
6						
7						
8						
9						
#						

Sampled By: [signature] **Date:** 11/19/24
Transported to Paradigm By: [signature] **Date:** 11/26/24
Received By: [signature] **Date:** 11.26.24 1530

By signing this form, client agrees to Paradigm Terms and Conditions (reverse).

All samples will be analyzed by the appropriate New York State Department of Health methods (198.1,198.4 and 198.6) unless EPA 600/M4/82/020 per 40 CFR 763 and/or EPA 600/R-93/116 methods are requested.

CHECK TO AUTOMATICALLY PERFORM TEM ON NOBS or provide TEM contact name: x

TOTAL NUMBER OF SAMPLES ON ALL CHAINS OF CUSTODY:

Pg 2 of 2

PARADIGM
ENVIRONMENTAL SERVICES

179 Lake Avenue, Rochester, NY 14608 Office: (585) 647-2530

PLM & TEM BULK ASBESTOS ANALYSIS REPORT
via NYSDOH ELAP Method 198.1,198.4 and 198.6

Client: Ravi Engineering & Land Surveying, P.C.
Location: Binghamton University, Union
Binghamton, New York
Sample Date: 2/28/2025

Job No: 1898-25

Client ID	Lab ID	Sampling Location	Description	PLM Asbestos Fibers Type & Percentage	PLM Total Asbestos	NOB	TEM Asbestos Fibers Type & Percentage	TEM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage	Non-Fibrous Matrix Material %
8-A	18334	113B Wall	White Gypsum Board	None Detected	0%		Not Required	N/A	Cellulose 4% Fiberglass 1%	95%
8-B	18335	171 Wall	White Gypsum Board	None Detected	0%		Not Required	N/A	Cellulose 4% Fiberglass 1%	95%
9-A	18336	113B Wall	White Joint Compound	None Detected	0%		Not Required	N/A	None Detected	100%
9-B	18337	171 Wall	White Joint Compound	None Detected	0%		Not Required	N/A	None Detected	100%
10-A	18338	UU-6 Floor	White Terrazzo	None Detected	0%		Not Required	N/A	None Detected	100%
10-B	18339	UU-6 Floor	White Terrazzo	None Detected	0%		Not Required	N/A	None Detected	100%

KEY TO NOB COLUMN SYMBOLS
No Symbol in the NOB column denotes sample analyzed by ELAP Method 198.1 (PLM).
v NOB (non-friable organically bound)denotes material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
Ṽ denotes material analyzed by ELAP Method 198.6 (PLM) per NYSDOH. This Method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite.
 # denotes friable material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
X denotes sample prepped only by ELAP Method 198.6.
**** Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.**

PLM Bulk Asbestos Analysis by New York State Department of Health, ELAP Method 198.1 ,198.4 and 198.6 ("Polarized Light Microscopy and Transmission Electron Microscopy Methods for Identifying and Quantitating Asbestos in Bulk Samples and in Non-Friable Organically Bound Bulk Samples.")or EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab Code 200530-0).

NVLAP TESTING

ELAP ID No.: 10958

Lab Code 200530-0 for PLM Analysis

Microscope: Olympus BH-2 #211874
PLM Analyst: T. Bush
Date of Analysis: 3/6/2025

Microscope: JEOL-100CX-II #EM-156094-87
TEM Analyst: N/A
Date of Analysis: N/A

Laboratory Results Approved By:
Asbestos Technical Director or Designee Fernanda Weinman

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PARADIGM
ENVIRONMENTAL SERVICES

179 Lake Avenue, Rochester, NY 14608 Office: (585) 647-2530

PLM & TEM BULK ASBESTOS ANALYSIS REPORT
via NYSDOH ELAP Method 198.1,198.4 and 198.6

Client: Ravi Engineering & Land Surveying, P.C.
Location: Binghamton University, Union
Binghamton, New York
Sample Date: 2/28/2025

Job No: 1898-25

Client ID	Lab ID	Sampling Location	Description	PLM Asbestos Fibers Type & Percentage	PLM Total Asbestos	NOB	TEM Asbestos Fibers Type & Percentage	TEM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage	Non-Fibrous Matrix Material %
11-A	18340	Lobby 104 Wall	White Plaster	None Detected	0%		Not Required	N/A	None Detected	100%
12-A	18341	Lobby 104 Wall	Gray Plaster	None Detected	0%		Not Required	N/A	None Detected	100%
11-B	18342	C100M Wall	White Plaster	None Detected	0%		Not Required	N/A	None Detected	100%
12-B	18343	C100M Wall	Gray Plaster	None Detected	0%		Not Required	N/A	None Detected	100%
11-C	18344	113B Wall	White Plaster	None Detected	0%		Not Required	N/A	None Detected	100%
12-C	18345	113B Wall	Gray Plaster	None Detected	0%		Not Required	N/A	None Detected	100%
13-A	18346	W103 Floor	White/Gray Mottled 12"x12" Floor Tile	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
13-B	18347	W103 Floor	White/Gray Mottled 12"x12" Floor Tile	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
14-A	18348	W103 Floor	Tan Floor Tile Mastic	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
14-B	18349	W103 Floor	Tan Floor Tile Mastic	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%

KEY TO NOB COLUMN SYMBOLS
No Symbol in the NOB column denotes sample analyzed by ELAP Method 198.1 (PLM).
√ NOB (non-friable organically bound)denotes material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
V̄ denotes material analyzed by ELAP Method 198.6 (PLM) per NYSDOH. This Method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite.
 # denotes friable material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
X denotes sample prepped only by ELAP Method 198.6.
**** Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.**

PLM Bulk Asbestos Analysis by New York State Department of Health, ELAP Method 198.1 ,198.4 and 198.6 ("Polarized Light Microscopy and Transmission Electron Microscopy Methods for Identifying and Quantitating Asbestos in Bulk Samples and in Non-Friable Organically Bound Bulk Samples.")or EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab Code 200530-0).

NVLAP TESTING

ELAP ID No.: 10958

Lab Code 200530-0 for PLM Analysis

Microscope: Olympus BH-2 #211874
PLM Analyst: T. Bush
Date of Analysis: 3/10/2025

Microscope: JEOL-100CX-II #EM-156094-87
TEM Analyst: M. Lochner
Date of Analysis: 3/12/2025

Laboratory Results Approved By:
Asbestos Technical Director or Designee Fernanda Weinman

Paradigm Environmental Services, Inc. is not responsible for the data supplied by an independent inspector. National Institute of Standards and Technology Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the laboratory. This PLM report relates ONLY to the items tested. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. Quality control data (including 95% confidence limits and/or laboratory and analysts' precision) is available upon request. All samples that were analyzed were received in acceptable condition.

PARADIGM
ENVIRONMENTAL SERVICES

179 Lake Avenue, Rochester, NY 14608 Office: (585) 647-2530

PLM & TEM BULK ASBESTOS ANALYSIS REPORT
via NYSDOH ELAP Method 198.1,198.4 and 198.6

Client: Ravi Engineering & Land Surveying, P.C.
Location: Binghamton University, Union
Binghamton, New York
Sample Date: 2/28/2025

Job No: 1898-25

Client ID	Lab ID	Sampling Location	Description	PLM Asbestos Fibers Type & Percentage	PLM Total Asbestos	NOB	TEM Asbestos Fibers Type & Percentage	TEM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage	Non-Fibrous Matrix Material %
15-A	18350	Lobby 104 Ceiling	Gray Fibrous Suspended Acoustical Ceiling Tile	Inconclusive No Asbestos Detected	0%	#	None Detected	<1.0%	Mineral Wool 20%	80%
15-B	18351	Toilet Room 106 Ceiling	Gray Fibrous Suspended Acoustical Ceiling Tile	Inconclusive No Asbestos Detected	0%	#	None Detected	<1.0%	Mineral Wool 30%	70%
16-A	18352	UU-15 Door Frame	Gray Door Caulk	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
16-B	18353	UU-14 Door Frame	Gray Door Caulk	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
17-A	18354	UU-15 Sidelite Glass	Gray Window Glazing Compound	Inconclusive Trace Chrysotile Detected	<1.0%	#	Chrysotile 1.5%	1.5%	None Detected	98.5%
17-B	18355	UU-14 Sidelite Glass	Gray Window Glazing Compound	Inconclusive No Asbestos Detected	0%	#	Chrysotile 2.4%	2.4%	None Detected	97.6%

KEY TO NOB COLUMN SYMBOLS
No Symbol in the NOB column denotes sample analyzed by ELAP Method 198.1 (PLM).
√ NOB (non-friable organically bound)denotes material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
V̂ denotes material analyzed by ELAP Method 198.6 (PLM) per NYSDOH. This Method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite.
 # denotes friable material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
X denotes sample prepped only by ELAP Method 198.6.
**** Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials.**
Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.

PLM Bulk Asbestos Analysis by New York State Department of Health, ELAP Method 198.1 ,198.4 and 198.6 ("Polarized Light Microscopy and Transmission Electron Microscopy Methods for Identifying and Quantitating Asbestos in Bulk Samples and in Non-Friable Organically Bound Bulk Samples.")or EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab Code 200530-0).

NVLAP TESTING

ELAP ID No.: 10958

Lab Code 200530-0 for PLM Analysis

Microscope: Olympus BH-2 #211874
PLM Analyst: T. Bush
Date of Analysis: 3/7/2025

Microscope: JEOL-100CX-II #EM-156094-87
TEM Analyst: A. Voldbakken
Date of Analysis: 3/10/2025

Laboratory Results Approved By: _____
Asbestos Technical Director or Designee Fernanda Weinman

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CHAIN OF CUSTODY FOR BULK ASBESTOS ANALYSIS

Ravi Rates

PARADIGM

[X] 179 Lake Avenue, Rochester, New York 14608 — Office: 585-647-2530
[ ] 1815 Love Road, Grand Island , New York 14072 — Office: 716-775-5777

Client: Ravi Engineering & Land Survey P.C.	**Contact:** Tony Hill
Phone Number: (585) 223-3660	**Email Address for Data:** Ahill@ravieng.com
Client Mailing Address: 2110 S. Clinton Ave, Suite 1 Rochester, New York 14618	**Results To** Tony Hill **Turn Around Time:** 1 [ ] 2 [ ] 3 [ ] 5 [X] 3-12 Other [ ]
Ravi Project # 43-25-238A	**Date Sampled** 2/28/2025 **Material Type/Quantity:** Friable ___ NOB ___ TEM ___
	Project Location: Binghatmon University - Union, Binghamton, New York

OFFICE USE ONLY

Job #: 18918-25

Page 4 **of** 6 ~~3~~

Date Logged In: 3.5.25

Logged In By: KA 1 of 3

	Client ID	Lab ID	Sampling Location	Color	Material Size	Type of Material
1	8A	18334	113B wall	WH		GypsumBoard
2	8B	335	171 wall	↓		↓
3	9A	336	113B wall	↓		Joint Compound
4	9B	337	171 wall	↓		↓
5	10A	338	UU-6 Floor	WH		Terrazzo
6	10B	339	↓	↓		↓
7	—		—	—		—
8	—		—	—		—
9	—		—	—		—
#	—		—	—		—

Sampled By: Tony Hill **Date:** 2/28/25

Transported to Paradigm By: [signature] **Date:** 3/5/25

Received By: [signature] **Date:** 3.5.25 1704

By signing this form, client agrees to Paradigm Terms and Conditions (reverse).

All samples will be analyzed by the appropriate New York State Department of Health methods (198.1,198.4 and 198.6) unless EPA 600/M4/82/020 per 40 CFR 763 and/or EPA 600/R-93/116 methods are requested.

CHECK TO AUTOMATICALLY PERFORM TEM ON NOBS [x]

or provide TEM contact name:

TOTAL NUMBER OF SAMPLES ON ALL CHAINS OF CUSTODY: [ ]

Pg 1 of 3

CHAIN OF CUSTODY FOR BULK ASBESTOS ANALYSIS

PARADIGM

Ravi Rates

[X] 179 Lake Avenue, Rochester, New York 14608 — Office: 585-647-2530
[ ] 1815 Love Road, Grand Island , New York 14072 — Office: 716-775-5777

Client: Ravi Engineering & Land Survey P.C.	**Contact:** Tony Hill
Phone Number: (585) 223-3660	**Email Address for Data:** Ahill@ravieng.com
Client Mailing Address: 2110 S. Clinton Ave, Suite 1	**Results To** Tony Hill
Rochester, New York 14618	**Date Sampled** 2/28/2025
Ravi Project # 43-25-238A	**Project Location:** Binghatmon University - Union, Binghamton, New York

Turn Around Time: 1 [ ] 2 [ ] 3 [ ] 5 [X] 3-12 Other [ ]

Material Type/Quantity: Friable ___ NOB ___ TEM ___

OFFICE USE ONLY
Job #: 18498-25
Page 3 of 6 3
Date Logged In: 3.5.25
Logged In By: KA 2 of 3

	Client ID	Lab ID	Sampling Location	Color	Material Size	Type of Material
1	11A	18340	~~Wall~~ Lobby 104 wall	WH		Plaster
2	12A	341	↓	GRY		↓
3	11B	342	C100M wall	WH		
4	12B	343	↓	GRY		
5	11C	344	113B wall	WH		
6	12C	345	↓	GRY		↓
7	13A	346	W103 floor	WH/GRY	12"x12"	mottled ~~12"x12"~~ floor tile
8	13B	347	↓	↓	↓	
9	14A	348		TAN		
#	14B	349	↓	↓		

Sampled By: Tony Hill **Date:** 2/28/25

Transported to Paradigm By: [signature] **Date:** 3/5/25

Received By: [signature] **Date:** 3.5.25 1704

By signing this form, client agrees to Paradigm Terms and Conditions (reverse).

All samples will be analyzed by the appropriate New York State Department of Health methods (198.1,198.4 and 198.6) unless EPA 600/M4/82/020 per 40 CFR 763 and/or EPA 600/R-93/116 methods are requested.

CHECK TO AUTOMATICALLY PERFORM TEM ON NOBS [x]
or provide TEM contact name:

TOTAL NUMBER OF SAMPLES ON ALL CHAINS OF CUSTODY: [ ]

pg 2 of 3

CHAIN OF CUSTODY FOR BULK ASBESTOS ANALYSIS

PARADIGM

Ravi Rates

[X] 179 Lake Avenue, Rochester, New York 14608 — Office: 585-647-2530
[ ] 1815 Love Road, Grand Island , New York 14072 — Office: 716-775-5777

Client: Ravi Engineering & Land Survey P.C.	**Contact:** Tony Hill
Phone Number: (585) 223-3660	**Email Address for Data:** Ahill@ravieng.com
Client Mailing Address: 2110 S. Clinton Ave, Suite 1	**Results To** Tony Hill
Rochester, New York 14618	**Date Sampled** 2/28/2025
Ravi Project # 43-25-238A	**Project Location:** Binghatmon University - Union, Binghamton, New York

Turn Around Time: 1 [ ] 2 [ ] 3 [ ] 5 [X] 3-12 Other [ ]

Material Type/Quantity: Friable ___ NOB ___ TEM ___

OFFICE USE ONLY
Job #: 1898-25
Page 6 of 6 3
Date Logged In: 3.5.25
Logged In By: KA 3 of 3

	Client ID	Lab ID	Sampling Location	Color	Material Size	Type of Material
1	15A	18350	Lobby 104 ceiling	GRY		Suspended Acoustical ceiling tile
2	15B	351	Toilet room 106 ceiling	↓		↓
3	16A	352	UU-15 Door frame	GRY		Door caulk
4	16B	353	UU-14 Door frame	↓		↓
5	17A	354	UU-15 sidelite glass			Window glazing compound
6	17B	355	UU-14 sidelite glass			↓
7						
8						
9						
#						

Sampled By: Tony Hill **Date:** 2/28/25

Transported to Paradigm By: [signature] **Date:** 3/5

Received By: [signature] **Date:** 3.5.25 1704

By signing this form, client agrees to Paradigm Terms and Conditions (reverse).

All samples will be analyzed by the appropriate New York State Department of Health methods (198.1,198.4 and 198.6) unless EPA 600/M4/82/020 per 40 CFR 763 and/or EPA 600/R-93/116 methods are requested.

CHECK TO AUTOMATICALLY PERFORM TEM ON NOBS [x]
or provide TEM contact name:

TOTAL NUMBER OF SAMPLES ON ALL CHAINS OF CUSTODY: [ ]

pg 3 of 3

ATTACHMENT F

License and Certifications

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton University

University Union

4400 Vestal Parkway East

Binghamton, New York 13902

STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE

N.Y.S



TONY HILL
CLASS(EXPIRES)
D INSP (09/24) H PM (09/24)
I PD (09/24)

CERT# 23-6LYFU-SHAB
DMV# 688601121

MUST BE CARRIED ON ASBESTOS PROJECTS

WE ARE YOUR DOL

NEW YORK STATE | Department of Labor

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

ASBESTOS HANDLING LICENSE

Ravi Engineering and Land Surveying, P.C.
2110 South Clinton Ave., Suite 1, Rochester, NY, 14618

License Number: 29384
License Class: RESTRICTED
Date of Issue: 01/31/2025
Expiration Date: 02/28/2026
Duly Authorized Representative: Nagappa Ravindra

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

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2026
Issued April 01, 2025

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. STEVE DEVITO
PARADIGM ENVIRONMENTAL SERVICES INC
179 LAKE AVENUE
ROCHESTER, NY 14608

NY Lab Id No: 10958

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
Lead in Dust Wipes	EPA 6010C
Lead in Paint	EPA 6010C

Sample Preparation Methods

	EPA 3050B

Serial No.: 70337

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LIMITED PCB CAULK SURVEY

State University of New York Binghamton University
University Union
4400 Vestal Parkway East
Binghamton, New York 13902

Volume 2 of 2

Prepared For:

QPK Design, LLP
450 South Salina Street
Suite 225
Syracuse, NY 13202

Prepared By:

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618

April 2025

Project No. 43-24-238A

LIMITED PCB CAULK SURVEY

State University of New York Binghamton University
University Union
4400 Vestal Parkway East
Binghamton, New York 13902

Volume 2 of 2

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EXECUTIVE SUMMARY

Ravi Engineering & Land Surveying, P.C. (RE&LS) was retained by QPK Design, LLP (QPK) to conduct a Limited Polychlorinated Biphenyl (PCB) Caulk Survey at State University of New York (SUNY) Binghamton University, University Union at 4400 Vestal Parkway East, Binghamton, New York 13902. The Survey was conducted on November 19, 2024 and February 28, 2025.

The Survey included a visual assessment and collection of suspect caulks/sealants that would be impacted by the proposed renovation project. Caulks/sealants were sampled for PCB content to determine if special removal or disposal procedures are required.

The caulks/sealants that were sampled and analyzed for asbestos content (identified in Volume 1 of this report) were also sampled and analyzed for PCBs. Six (6) caulk/sealant samples were collected and submitted to Paradigm Environmental Services, Inc. for PCB analysis. Three (3) of the six (6) samples were determined to be above the regulatory threshold for a PCB bulk-product waste.

1.0 INTRODUCTION

Ravi Engineering & Land Surveying, P.C. (RE&LS) was retained by QPK Design, LLP (QPK) to conduct a Limited Polychlorinated Biphenyl (PCB) Caulk Survey at The State University of New York (SUNY) Binghamton, University Union. The Survey was conducted on November 19, 2024 and February 28, 2025.

2.0 PROJECT OVERVIEW

The Survey was conducted to support the University Union renovation project at SUNY Binghamton University. The scope of work was based on telephone and electronic correspondence between RE&LS and QPK through August 2024, a pre-bid walkthrough at SUNY Binghamton on July 15, 2024, and the document titled "SUCF Project Title: Replace Storefront Bartle Library, University Union, Administration. The Survey was limited to the University Union doors.

3.0 PCB CAULK SAMPLING/FINDINGS

Six (6) caulk/sealant samples were collected and submitted to Paradigm Environmental Services, Inc. (Paradigm) for PCB analysis. A copy of Paradigm's Certification is included in Attachment C. Bulk sample locations are included in Attachment A. Table 1 identifies caulks/sealants that were sampled and analyzed for PCBs along with their sample number, material description, location, and PCB content.

Table 1 – PCB CAULK SAMPLING RESULTS

Sample Number	Material Description and Location	PCB Total Content (ppm)
1P	Caulk – S. Elevation - Window Frame	**31800**
3P	Caulk – S. Elevation – Door Sidelite Frame	BDL
4P	Caulk – Loading Dock – Window Frame	BDL
6P	Caulk – S. Elevation - Door Frame	**28700**
7P	Caulk – N. Elevation – Door Sidelite Frame	BDL
16P	Caulk – UU-14 Door	**15800**

Note: The above identified caulks/sealants were also analyzed for asbestos content as identified in Volume 1 of this report.
ppm: Parts per Million

Three (3) of the six (6) samples analyzed were found to be above the regulatory threshold for PCB bulk-product waste (≥50 parts per million; ppm). The United States Environmental Protection Agency (USEPA) defines PCB bulk-product waste as "waste derived from manufacturing products containing PCBs in a non-liquid state, at any concentration where the concentration at the time of designation for disposal was ≥50 ppm PCB."

4.0 LIMITATIONS OF INVESTIGATION

The Survey was based on the project scope as described in Section 2.0 Project Overview above. Non-destructive sampling techniques were employed during the Survey. Areas that were inaccessible were not sampled nor identified.

5.0 RECOMMENDATIONS

Three (3) of the six (6) caulks/sealants sampled and analyzed were determined to be PCB-containing above the USEPA threshold for bulk product waste. Caulks/sealants that were determined to be PCB-containing at or above the regulatory threshold for PCB bulk-product waste shall be removed and disposed of in accordance with 40 CFR Part 761.62.

Suspect caulks/sealants, not identified in this Survey report, discovered during renovation or demolition activities shall be assumed to be PCB-containing until laboratory analysis proves otherwise.

ATTACHMENT A

Areas of Inspection/Bulk Sample Location Plans

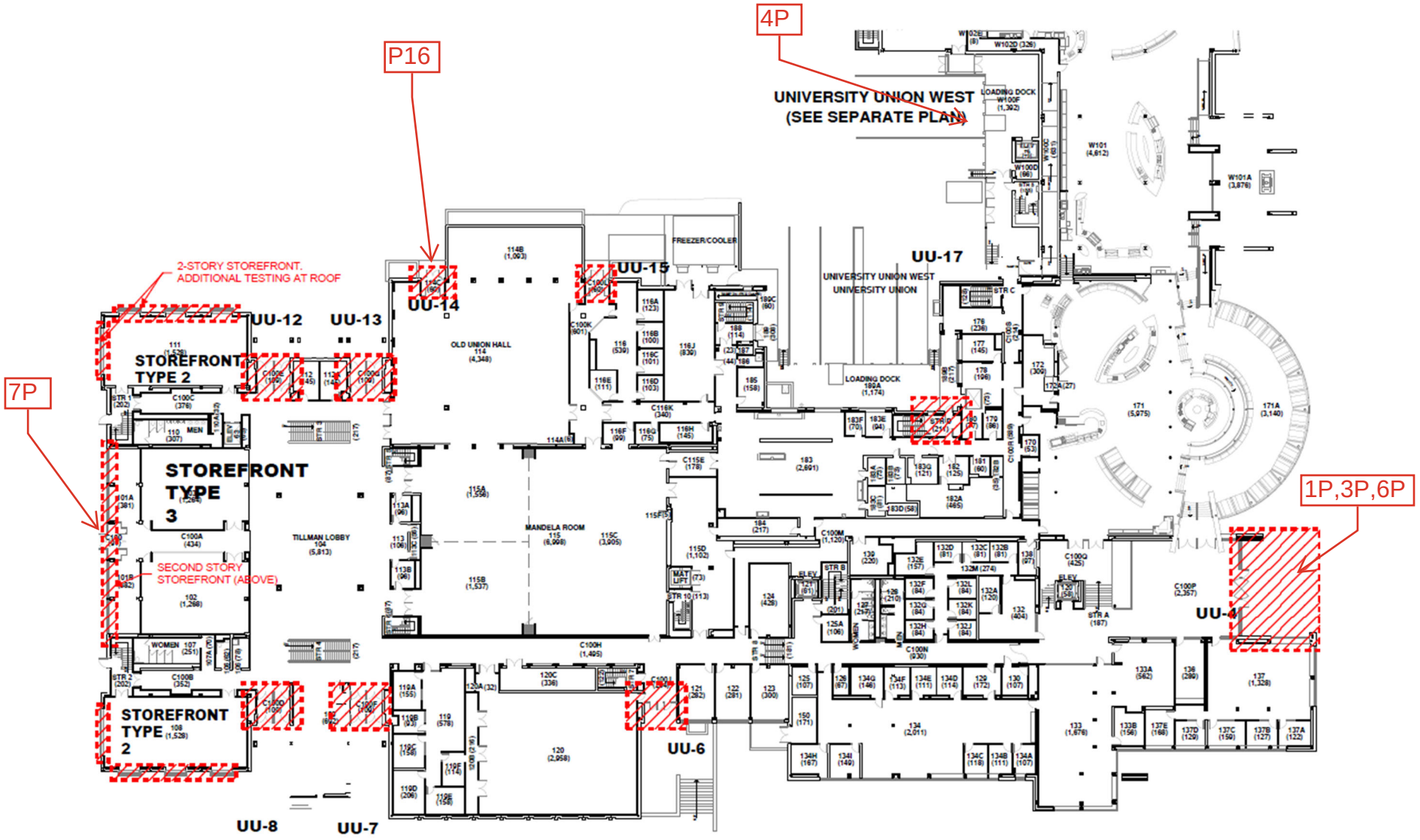
LIMITED PCB CAULK SURVEY

State University of New York Binghamton University

University Union

4400 Vestal Parkway East

Binghamton, New York 13902



RAVI ENGINEERING & LAND SURVEYING, P.C. 2110 S. Clinton Avenue Rochester, NY 14618 TL: (585) 223-3660 FX (585) 697-1794	SUNY BINGHAMTON UNIVERSITY, UNIVERSITY UNION 4400 VESTAL PARKWAY EAST, BINGHAMTON NEW YORK LIMITED ASBESTOS SURVEY	PROJECT NO. 43-24-238-A	DATE: MAY 2025
	LIMITED PCB CAULK SAMPLE/SURVEY MAP	SCALE: N.T.S.	DRAWING NO: 1

ATTACHMENT B

Analytical Report and Chain of Custody Forms

LIMITED PCB CAULK SURVEY

State University of New York Binghamton University

University Union

4400 Vestal Parkway East

Binghamton, New York 13902

PARADIGM
ENVIRONMENTAL SERVICES, INC.

Analytical Report For

Ravi Engineering & Land Surveying, P.C.

For Lab Project ID

245599

Referencing

43-24-238 - Binghamton University - Union*Referencing*

Prepared

Tuesday, December 10, 2024

Any noncompliant QC parameters or other notes impacting data interpretation are flagged or documented on the final report or are noted below.

Emily Farmen

Certifies that this report has been approved by the Technical Director or Designee

179 Lake Avenue • Rochester, NY 14608 • (585) 647-2530 • Fax (585) 647-3311 • ELAP ID# 10958

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

Sample Identifier: 1P - S. Elevation - Window Frame
Lab Sample ID: 245599-01
Matrix: Caulk

Date Sampled: 11/19/2024
Date Received 11/26/2024

PCBs

Analyte	Result	Units	Qualifier	Date Analyzed
PCB-1016	< 3500	mg/Kg		12/10/2024 12:11
PCB-1221	< 3500	mg/Kg		12/10/2024 12:11
PCB-1232	< 3500	mg/Kg		12/10/2024 12:11
PCB-1242	< 3500	mg/Kg		12/10/2024 12:11
PCB-1248	< 3500	mg/Kg		12/10/2024 12:11
PCB-1254	**11800**	mg/Kg		12/10/2024 12:11
PCB-1260	< 3500	mg/Kg		12/10/2024 12:11
PCB-1262	< 3500	mg/Kg		12/10/2024 12:11
PCB-1268	**31800**	mg/Kg		12/10/2024 12:11

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Tetrachloro-m-xylene	NC	16.1 - 102		12/10/2024 12:11

Method Reference(s): EPA 8082A
EPA 3546

Preparation Date: 12/4/2024

Sample Identifier: 3P - S. Elevation - Door Sidelite Frame
Lab Sample ID: 245599-02
Matrix: Caulk

Date Sampled: 11/19/2024
Date Received 11/26/2024

PCBs

Analyte	Result	Units	Qualifier	Date Analyzed

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

PCB-1016	< 2.23	mg/Kg			12/9/2024 22:39
PCB-1221	< 2.23	mg/Kg			12/9/2024 22:39
PCB-1232	< 2.23	mg/Kg			12/9/2024 22:39
PCB-1242	< 2.23	mg/Kg			12/9/2024 22:39
PCB-1248	< 2.23	mg/Kg			12/9/2024 22:39
PCB-1254	< 2.23	mg/Kg			12/9/2024 22:39
PCB-1260	< 2.23	mg/Kg			12/9/2024 22:39
PCB-1262	< 2.23	mg/Kg			12/9/2024 22:39
PCB-1268	< 2.23	mg/Kg			12/9/2024 22:39

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Tetrachloro-m-xylene	**18.2**	16.1 - 102		12/9/2024 22:39

Matrix interferences present in samples associated with this analytical batch caused analyte suppression of closing quality control. Results could be biased low.

Method Reference(s): EPA 8082A
EPA 3546
Preparation Date: 12/4/2024

Sample Identifier: 4P - Loading Dock - Window Frame
Lab Sample ID: 245599-03
Matrix: Caulk
Date Sampled: 11/19/2024
Date Received 11/26/2024

PCBs

Analyte	Result	Units	Qualifier	Date Analyzed
PCB-1016	< 2.72	mg/Kg		12/6/2024 02:49

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

PCB-1221	< 2.72	mg/Kg		12/6/2024 02:49
PCB-1232	< 2.72	mg/Kg		12/6/2024 02:49
PCB-1242	< 2.72	mg/Kg		12/6/2024 02:49
PCB-1248	< 2.72	mg/Kg		12/6/2024 02:49
PCB-1254	< 2.72	mg/Kg		12/6/2024 02:49
PCB-1260	< 2.72	mg/Kg		12/6/2024 02:49
PCB-1262	< 2.72	mg/Kg		12/6/2024 02:49
PCB-1268	< 2.72	mg/Kg		12/6/2024 02:49

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Tetrachloro-m-xylene	**61.7**	16.1 - 102		12/6/2024 02:49

Method Reference(s): EPA 8082A
EPA 3546

Preparation Date: 12/4/2024

Sample Identifier: 6P - S. Elevation - Door Frame
Lab Sample ID: 245599-04
Matrix: Caulk

Date Sampled: 11/19/2024
Date Received 11/26/2024

PCBs

Analyte	Result	Units	Qualifier	Date Analyzed
PCB-1016	< 3570	mg/Kg		12/10/2024 12:34
PCB-1221	< 3570	mg/Kg		12/10/2024 12:34
PCB-1232	< 3570	mg/Kg		12/10/2024 12:34
PCB-1242	< 3570	mg/Kg		12/10/2024 12:34
PCB-1248	< 3570	mg/Kg		12/10/2024 12:34
PCB-1254	**11900**	mg/Kg		12/10/2024 12:34

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

PCB-1260	< 3570	mg/Kg			12/10/2024 12:34
PCB-1262	< 3570	mg/Kg			12/10/2024 12:34
PCB-1268	**28700**	mg/Kg			12/10/2024 12:34

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Tetrachloro-m-xylene	NC	16.1 - 102		12/10/2024 12:34

Method Reference(s): EPA 8082A
EPA 3546

Preparation Date: 12/4/2024

Sample Identifier: 7P - N. Elevation - Door Sidelite Frame
Lab Sample ID: 245599-05
Matrix: Caulk

Date Sampled: 11/19/2024
Date Received 11/26/2024

PCBs

Analyte	Result	Units	Qualifier	Date Analyzed
PCB-1016	< 3.38	mg/Kg		12/6/2024 03:36
PCB-1221	< 3.38	mg/Kg		12/6/2024 03:36
PCB-1232	< 3.38	mg/Kg		12/6/2024 03:36
PCB-1242	< 3.38	mg/Kg		12/6/2024 03:36
PCB-1248	< 3.38	mg/Kg		12/6/2024 03:36
PCB-1254	< 3.38	mg/Kg		12/6/2024 03:36
PCB-1260	< 3.38	mg/Kg		12/6/2024 03:36
PCB-1262	< 3.38	mg/Kg		12/6/2024 03:36
PCB-1268	< 3.38	mg/Kg		12/6/2024 03:36

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Tetrachloro-m-xylene	**19.4**	16.1 - 102		12/6/2024 03:36

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

Method Reference(s): EPA 8082A
EPA 3546

Preparation Date: 12/4/2024

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Analytical Report Appendix

The reported results relate only to the samples as they have been received by the laboratory.

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All soil/sludge samples have been reported on a dry weight basis, unless qualified "reported as received". Other solids are reported as received.

Low level Volatiles blank reports for soil/solid matrix are based on a nominal 5 gram weight. Sample results and reporting limits are based on actual weight, which may be more or less than 5 grams.

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Data qualifiers are used, when necessary, to provide additional information about the data. This information may be communicated as a flag or as text at the bottom of the report. Please refer to the following list of analyte-specific, frequently used data flags and their meaning: *"<" = Analyzed for but not detected at or above the quantitation limit.*

"E" = Result has been estimated, calibration limit exceeded.
"H" = Denotes a parameter analyzed outside of holding time.
"Z" = See case narrative.
"D" = Sample, Laboratory Control Sample, or Matrix Spike Duplicate results above Relative Percent Difference limit.
"M" = Matrix spike recoveries outside QC limits. Matrix bias indicated.
"B" = Method blank contained trace levels of analyte. Refer to included method blank report.
"J" = Result estimated between the quantitation limit and half the quantitation limit.
"L" = Laboratory Control Sample recovery outside accepted QC limits.
"P" = Concentration differs by more than 40% between the primary and secondary analytical columns. "NC" = Not calculable. Applicable to RPD if sample or duplicate result is non-detect or estimated (see primary report for data flags). Applicable to MS if sample is greater or equal to ten times the spike added. Applicable to sample surrogates or MS if sample dilution is 10x or higher.
"" = Indicates any recoveries outside associated acceptance windows. Surrogate outliers in samples are presumed matrix effects. LCS demonstrates method compliance unless otherwise noted.*
"(1)" = Indicates data from primary column used for QC calculation.

"A" = denotes a parameter for which ELAP does not offer approval as part of their laboratory certification program.
"F" = denotes a parameter for which Paradigm does not carry certification, the results for which should therefore only be used where ELAP certification is not required, such as personal exposure assessment.

GENERAL TERMS AND CONDITIONS
LABORATORY SERVICES

These Terms and Conditions embody the whole agreement of the parties in the absence of a signed and executed contract between the Laboratory (LAB) and Client. They shall supersede all previous communications, representations, or agreements, either verbal or written, between the parties. The LAB specifically rejects all additional, inconsistent, or conflicting terms, whether printed or otherwise set forth in any purchase order or other communication from the Client to the LAB. The invalidity or unenforceability in whole or in part of any provision, term or condition hereof shall not affect in any way the validity or enforceability of the remainder of the Terms and Conditions. No waiver by LAB of any provision, term, or condition hereof or of any breach by or obligation of the Client hereunder shall constitute a waiver of such provision, term, or condition on any other occasion or a waiver of any other breach by or obligation of the Client. This agreement shall be administered and interpreted under the laws of the state which services are procured.

Warranty. Recognizing that the nature of many samples is unknown and that some may contain potentially hazardous components, LAB warrants only that it will perform testing services, obtain findings, and prepare reports in accordance with generally accepted analytical laboratory principles and practices at the time of performance of services. LAB makes no other warranty, express or implied.

Scope and Compensation. LAB agrees to perform the services described in the chain of custody to which these terms and conditions are attached. Unless the parties agree in writing to the contrary, the duties of LAB shall not be construed to exceed the services specifically described. LAB wi use LAB default method for all tests unless specified otherwise on the Work Order.
Payment terms are net 30 days from the date of invoice. All overdue payments are subject to an interest charge of one and one-half percent (1-1/2%) per month or a portion thereof. Client shall also be responsible for costs of collection, including payment of reasonable attorney fees if such expense is incurred. The prices, unless stated, do not include any sale, use or other taxes. Such taxes will be added to invoice prices when required.

Prices. Compensation for services performed will be based on the current Lab Analytical Fee Schedule or on quotations agreed to in writing by the parties. Turnaround time based charges are determined from the time of resolution of all work order questions. Testimony, court appearances or data compilation for legal action will be charged separately. Evaluation and reporting of initial screening runs may incur additional fees.

Limitations of Liability. In the event of any error, omission, or other professional negligence, the sole and exclusive responsibility of LAB shall be to reperform the deficient work at its own expense and LAB shall have no other liability whatsoever. All claims shall be deemed waived unless made in writing and received by LAB within ninety (90) days following completion of services.
LAB shall have no liability, obligation, or responsibility of any kind for losses, costs, expenses, or other damages (including but not limited to any special, direct, incidental or consequential damages) with respect to LAB's services or results.
All results provided by LAB are strictly for the use of its clients and LAB is in no way responsible for the use of such results by clients or third parties. All reports should be considered in their entirety, and LAB is not responsible for the separation, detachment, or other use of any portion of these reports. Client may not assign the lab report without the written consent of the LAB.
Client covenants and agrees, at its/his/her sole expense, to indemnify, protect, defend, and save harmless the LAB from and against any and all damages, losses, liabilities, obligations, penalties, claims, litigation, demands, defenses, judgments, suits, actions, proceedings, costs, disbursements and/or expenses (including, without limitation attorneys' and experts' fees and disbursements) of any kind whatsoever which may at any time be imposed upon, incurred by or asserted or awarded against client relating to, resulting from or arising out of (a) the breach of this agreement by this client, (b) the negligence of the client in handling, delivering or disclosing any hazardous substance, (c) the violation of the Client of any applicable law, (d) non-compliance by the Client with any environmental permit or (e) a material misrepresentation in disclosing the materials to be tested.

Hazard Disclosure. Client represents and warrants that any sample delivered to LAB will be preceded or accompanied by complete written disclosure of the presence of any hazardous substances known or suspected by Client. Client further warrants that any sample containing any hazardous substance that is to be delivered to LAB will be packaged, labeled, transported, and delivered properly and in accordance with applicable laws.

Sample Handling. Prior to LAB's acceptance of any sample (or after any revocation of acceptance), the entire risk of loss or of damage to such sample remains with Client. Samples are accepted when receipt is acknowledged on chain of custody documentation. In no event will LAB have any responsibility for the action or inaction of any carrier shipping or delivering any sample to or from LAB premises. Client authorizes LAB to proceed with the analysis of samples as received by the laboratory, recognizing that any samples not in compliance with all current DOH-ELAP-NELAP requirements for containers, preservation or holding time will be noted as such on the final report. Disposal of hazardous waste samples is the responsibility of the Client. If the Client does not wish such samples returned, LAB may add storage and disposal fees to the final invoice. Maximum storage time for samples is 30 days after completion of analysis unless modified by applicable state or federal laws. Client will be required to give the LAB written instructions concerning disposal of these samples.

LAB reserves the absolute right, exercisable at any time, to refuse to receive delivery of, refuse to accept, or revoke acceptance of any sample, which, in the sole judgment of LAB (a) is of unsuitable volume, (b) may be or become unsuitable for or may pose a risk in handling, transport, or processing for any health, safety, environmental or other reason whether or not due to the presence in the sample of any hazardous substance, and whether or not such presence has been disclosed to LAB by Client or (c) if the condition or sample date make the sample unsuitable for analysis.

Legal Responsibility. LAB is solely responsible for performance of this contract, and no affiliated company, director, officer, employee, or agent shall have any legal responsibility hereunder, whether in contract or tort including negligence.

Assignment. LAB may assign its performance obligations under this contract to other parties, as it deems necessary. LAB shall disclose to Client any assignee (subcontractor) by ELAP ID # on the submitted final report.

Force Majeure. LAB shall have no responsibility or liability to the Client for any failure or delay in performance by LAB, which results in whole or in part from any cause or circumstance beyond the reasonable control of LAB. Such causes and circumstances shall include, but not limited to, acts of God, acts or orders of any government authority, strikes or other labor disputes, natural disasters, accidents, wars, civil disturbances, difficulties or delays in transportation, mail or delivery services, inability to obtain sufficient services or supplies from LAB's usual suppliers, or any other cause beyond LAB's reasonable control.

Law. This contract shall be continued under the laws of the State of New York without regard to its conflicts of laws provision.

179 Lake Avenue, Rochester, NY 14608 Office (585) 647-2530 Fax (585) 647-3311

PARADIGM ENVIRONMENTAL SERVICES, INC.

CHAIN OF CUSTODY

REPORT TO:		INVOICE TO:			
COMPANY:	Ravi Engineering & Land Surveying, P.C.	COMPANY:	Same	LAB PROJECT #: 245599	CLIENT PROJECT #: 43-24-238
ADDRESS:	2110 South Clinton Avenue, Suite 1	ADDRESS:			
CITY:	Rochester STATE: NY ZIP: 14618	CITY:	STATE: ZIP:	TURNAROUND TIME: (WORKING DAYS)	
PHONE:	(585) 223-3660 FAX: (585) 223-4250	PHONE:	FAX:	STD / OTHER	
ATTN:	Tony Hill	ATTN:	Tony Hill	[ ] 1 [ ] 2 [ ] 3 [x] 5 [ ]	
COMMENTS:	Email results to ahill@ravieng.com			Quotation #: Ravi Rates	

PROJECT NAME/SITE NAME: Binghamton University - Union

REQUESTED ANALYSIS

	DATE	TIME	COMPOSITE	GRAB	SAMPLE LOCATION/FIELD ID	MATRIX	NUMBER CONTAINERS	PCBs	REMARKS	PARADIGM LAB SAMPLE NUMBER
1	11/19/24			X	1P-S. Elevation R	CK	1	X	window Frame	01
2					3P-S. Elevation			X	door sidelite frame	02
3					4P-Loading dock			X	window frame	03
4					6P-S. Elevation			X	Door frame	04
5					7P-N. Elevation			X	door sidelite frame	05
6										
7										
8										
9										
10										

****LAB USE ONLY BELOW THIS LINE****

Sample Condition: Per NELAC/ELAP 210/241/242/243/244

Receipt Parameter	NELAC Compliance	
Container Type:	Y [ ]	N [ ]
Comments:		
Preservation:	Y [ ]	N [ ]
Comments:		
Holding Time:	Y [ ]	N [ ]
Comments:		
Temperature:	Y [ ]	N [ ]
Comments:		

Sampled By	11/19/24	Date/Time
Relinquished By	11/26/24	Date/Time
Received By	11/20/24 1520	Date/Time
Received @ Lab By	11/26/24 15:44	Date/Time
20.1°C	11/26/24	15:32

Total Cost:

P.I.F.

PARADIGM
ENVIRONMENTAL SERVICES

Chain of Custody Supplement

Client: Ravi Engineering **Completed by:** Cedric

Lab Project ID: 245599 **Date:** 11/26/24

Sample Condition Requirements

Per NELAC/ELAP 210/241/242/243/244

Condition	*NELAC compliance with the sample condition requirements upon receipt* Yes	No	N/A
Container Type	X		
Comments			
Transferred to method-compliant container			X
Headspace (<1 mL)			X
Comments			
Preservation			X
Comments			
Chlorine Absent (<0.10 ppm per test strip)			X
Comments			
Holding Time	X		
Comments			
Temperature		X	
Comments	20.1°C		
Compliant Sample Quantity/Type	X		
Comments			

PARADIGM
ENVIRONMENTAL SERVICES, INC

Analytical Report For

Ravi Engineering & Land Surveying, P.C.

For Lab Project ID

250810

Referencing

43-25-238A Binghamton University - Union

Prepared

Tuesday, March 11, 2025

Any noncompliant QC parameters or other notes impacting data interpretation are flagged or documented on the final report or are noted below.

Emily Laumen

Certifies that this report has been approved by the Technical Director or Designee

179 Lake Avenue • Rochester, NY 14608 • (585) 647-2530 • Fax (585) 647-3311 • ELAP ID# 10958

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

PARADIGM
ENVIRONMENTAL SERVICES, INC.

Lab Project ID: 250810

Client: **Ravi Engineering & Land Surveying, P.C.**

Project Reference: 43-25-238A Binghamton University - Union

Sample Identifier: UU-14 Door / P16
Lab Sample ID: 250810-01 **Date Sampled:** 2/28/2025
Matrix: Caulk **Date Received** 3/5/2025

PCBs

Analyte	Result	Units	Qualifier	Date Analyzed
PCB-1016	< 1380	mg/Kg		3/10/2025 15:33
PCB-1221	< 1380	mg/Kg		3/10/2025 15:33
PCB-1232	< 1380	mg/Kg		3/10/2025 15:33
PCB-1242	< 1380	mg/Kg		3/10/2025 15:33
PCB-1248	< 1380	mg/Kg		3/10/2025 15:33
PCB-1254	**6640**	mg/Kg		3/10/2025 15:33
PCB-1260	< 1380	mg/Kg		3/10/2025 15:33
PCB-1262	< 1380	mg/Kg		3/10/2025 15:33
PCB-1268	**15800**	mg/Kg		3/10/2025 15:33

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Tetrachloro-m-xylene	NC	16.1 - 102		3/10/2025 15:33

Method Reference(s): EPA 8082A
EPA 3546
Preparation Date: 3/10/2025

Analytical Report Appendix

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LAB shall have no liability, obligation, or responsibility of any kind for losses, costs, expenses, or other damages (including but not limited to any special, direct, incidental or consequential damages) with respect to LAB's services or results.
All results provided by LAB are strictly for the use of its clients and LAB is in no way responsible for the use of such results by clients or third parties. All reports should be considered in their entirety, and LAB is not responsible for the separation, detachment, or other use of any portion of these reports. Client may not assign the lab report without the written consent of the LAB.
Client covenants and agrees, at its/his/her sole expense, to indemnify, protect, defend, and save harmless the LAB from and against any and all damages, losses, liabilities, obligations, penalties, claims, litigation, demands, defenses, judgments, suits, actions, proceedings, costs, disbursements and/or expenses (including, without limitation attorneys' and experts' fees and disbursements) of any kind whatsoever which may at any time be imposed upon, incurred by or asserted or awarded against client relating to, resulting from or arising out of (a) the breach of this agreement by this client, (b) the negligence of the client in handling, delivering or disclosing any hazardous substance, (c) the violation of the Client of any applicable law, (d) non-compliance by the Client with any environmental permit or (e) a material misrepresentation in disclosing the materials to be tested.

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Law. This contract shall be continued under the laws of the State of New York without regard to its conflicts of laws provision.

179 Lake Avenue, Rochester, NY 14608 Office (585) 647-2530 Fax (585) 647-3311

PARADIGM ENVIRONMENTAL SERVICES, INC.

CHAIN OF CUSTODY

250810

REPORT TO:		INVOICE TO:			
COMPANY:	Ravi Engineering & Land Surveying, P.C	COMPANY:	Same	LAB PROJECT #:	CLIENT PROJECT #: 43-25-238A
ADDRESS:	2110 South Clinton Avenue, Suite 1	ADDRESS:			
CITY:	Rochester STATE: NY ZIP: 14618	CITY:	STATE: ZIP:	TURNAROUND TIME: (WORKING DAYS)	
PHONE:	(585) 223-3660 FAX: (585) 223-4250	PHONE:	FAX:		STD ☐ OTHER ☐
PROJECT NAME/SITE NAME: Binghamton University - Union Binghamton, New York	ATTN: Tony Hill	ATTN:	Tony Hill	☐ 1 ☐ 2 ☐ 3 ☒ 5	
	COMMENTS: Email results to ahilll@ravieng.com			Quotation #: Ravi Rates	

REQUESTED ANALYSIS

	DATE	TIME	COMPOSITE	GRAB	SAMPLE LOCATION/FIELD ID	MATRIX	NUMBER CONTAINERS	PCBs										REMARKS	PARADIGM LAB SAMPLE NUMBER
1	2/28/25			X	WU-14 Door / PI6	CK	1	X											-01
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

LAB USE ONLY BELOW THIS LINE

Sample Condition: Per NELAC/ELAP 210/241/242/243/244

Receipt Parameter	NELAC Compliance	
Container Type:	Y ☐	N ☐
Comments:		
Preservation:	Y ☐	N ☐
Comments:		
Holding Time:	Y ☐	N ☐
Comments:		
Temperature:	Y ☐	N ☐
Comments: 22°C 3/5/25 17:03		

Tony Hill — Sampled By — 2-28-25 Date/Time

Relinquished By — Date/Time

Received By — Date/Time

Received @ Lab By — 3/5/2025 1705 Date/Time

Total Cost:

P.I.F.

PARADIGM

Chain of Custody Supplement

Client: Revi **Completed by:** Cadmium

Lab Project ID: 250810 **Date:** 3/5/25

Sample Condition Requirements

Per NELAC/ELAP 210/241/242/243/244

Condition	NELAC compliance with the sample condition requirements upon receipt: Yes	No	N/A
Container Type	X		
Comments			
Transferred to method-compliant container			X
Headspace (<1 mL)			X
Comments			
Preservation			X
Comments			
Chlorine Absent (<0.10 ppm per test strip)			X
Comments			
Holding Time	X		
Comments			
Temperature		X	
Comments	22.0°C		
Compliant Sample Quantity/Type	X		
Comments			

ATTACHMENT C

Laboratory Certification

LIMITED PCB CAULK SURVEY

State University of New York Binghamton University

University Union

4400 Vestal Parkway East

Binghamton, New York 13902

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2026
Issued April 01, 2025

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. STEVE DEVITO
PARADIGM ENVIRONMENTAL SERVICES INC
179 LAKE AVENUE
ROCHESTER, NY 14608

NY Lab Id No: 10958

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

Phthalate Esters

Dimethyl phthalate	EPA 625.1
	EPA 8270D
Di-n-butyl phthalate	EPA 625.1
	EPA 8270D
Di-n-octyl phthalate	EPA 625.1
	EPA 8270D

Polychlorinated Biphenyls

Aroclor 1016 (PCB-1016)	EPA 8082A
	EPA 608.3
Aroclor 1221 (PCB-1221)	EPA 8082A
	EPA 608.3
Aroclor 1232 (PCB-1232)	EPA 8082A
	EPA 608.3
Aroclor 1242 (PCB-1242)	EPA 8082A
	EPA 608.3
Aroclor 1248 (PCB-1248)	EPA 8082A
	EPA 608.3
Aroclor 1254 (PCB-1254)	EPA 8082A
	EPA 608.3
Aroclor 1260 (PCB-1260)	EPA 8082A
	EPA 608.3
Aroclor 1262 (PCB-1262)	EPA 8082A
Aroclor 1268 (PCB-1268)	EPA 8082A

Polynuclear Aromatics

Acenaphthene	EPA 625.1
	EPA 8270D

Serial No.: 70335

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

LIMITED PRE-RENOVATION HAZARDOUS MATERIAL INSPECTION

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850



Prepared For:

QPK Design, LLP
450 South Salina Street
Syracuse, NY 13202

Prepared By:

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618

April 2025

Project No. 43-24-238B

Preface

A Limited Hazardous Materials Inspection consisting of a Limited Pre-Renovation Asbestos Survey/Inspection, a Limited Polychlorinated Biphenyl (PCB) Caulk Survey, and a Limited Lead Paint Survey has been completed at the State University of New York Binghamton University Couper Administration Tower, 4400 Vestal Parkway East, Binghamton, New York. The results of the Survey/Inspections are included in this report and are presented in three volumes, namely:

Volume 1 of 3: Limited Pre-Renovation Asbestos Survey/Inspection

Volume 2 of 3: Limited PCB Caulk Survey

Volume 3 of 3: Limited Lead Paint Survey

Prepared by:

Riley Frantzen
Environmental Scientist
Ravi Engineering & Land Surveying, P.C.

Reviewed by:



Benjamin Reddy
Environmental Department Manager
Ravi Engineering & Land Surveying, P.C.

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850

Volume 1 of 3

Prepared For:

QPK Design, LLP
450 South Salina Street
Suite 225
Syracuse, NY 13202

Prepared By:

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618

April 2025

Project No. 43-24-238A

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850

Volume 1 of 3

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EXECUTIVE SUMMARY

Ravi Engineering & Land Surveying, P.C. (RE&LS) was retained by QPK Design, LLP (QPK) to conduct a Limited Pre-Renovation Asbestos Survey/Inspection at the State University of New York (SUNY) Binghamton University Couper Administration Tower, 4400 Vestal Parkway East, Binghamton, New York. The Survey/Inspection was conducted on November 19, 2024 & February 28, 2025.

The Survey/Inspection was conducted to support the proposed renovation project at SUNY Binghamton Couper Administration Tower. The scope of work was based on telephone and electronic correspondence between RE&LS and QPK in September 2024, a pre-bid walkthrough at SUNY Binghamton on July 15, 2024, and the document *SUCF Project Title: Study – Exterior Envelope Investigation – Library and Administration Towers*, dated January 2024. The Survey/Inspection was limited to the Couper Administration Tower.

TABLE 1 – ASBESTOS SUMMARY TABLE

ABESTOS-CONTAINING MATERIALS
Black Pliable Window Glazing Compound
White/Gray Panel Glazing Compound
Black Tar Paper
Gray/Tan Sidelite Caulk
Gray/Tan Window Caulk
Black Vapor Barrier
NON ASBESTOS-CONTAINING MATERIALS
Light Gray Window Caulk
White Ceramic Tile Grout
Gray Ceramic Tile Grout
Gray Door Caulk
Gray 2'x2' Acoustical Ceiling Tile
White Crumbly Window Glaze Compound
White Terrazzo
Gray Grout
White Terrazzo

Asbestos-containing materials (ACM) have been identified in the proposed renovation areas. Locations of ACMs are shown on the Asbestos Location Plans in Attachment B.

No demolition, renovation, remodeling, or repair work shall commence by any owner or owner's agent in areas where ACMs and/or suspect ACMs exist prior to the completion of asbestos abatement. The Construction Manager shall notify all subcontractors of the presence and locations of ACMs and suspect ACMs consistent with OSHA regulation 29 CFR 1926.1101. Suspect ACMs, not identified in this Survey/Inspection report, discovered during renovation or demolition activities shall be assumed to contain asbestos until laboratory analysis proves otherwise.

1.0 INTRODUCTION

Ravi Engineering & Land Surveying, P.C. (RE&LS) was retained by QPK Design, LLP (QPK) to conduct a Limited Pre-Renovation Asbestos Survey/Inspection at the State University of New York (SUNY) Binghamton University Couper Administration Tower. A Certified Asbestos Inspector assessed interior spaces for suspect asbestos-containing building materials that may be impacted by the proposed renovation project to determine the presence, location, quantity, and condition of asbestos-containing materials (ACMs). The Survey/Inspection was conducted on November 19, 2024 & February 28, 2025.

2.0 PROJECT OVERVIEW

The Survey/Inspection was conducted to support the proposed renovation project at SUNY Binghamton Couper Administration Tower. The scope of work was based on telephone and electronic correspondence between RE&LS and QPK in September 2024, a pre-bid walkthrough at SUNY Binghamton on July 15, 2024, and the document *SUCF Project Title: Study – Exterior Envelope Investigation – Library and Administration Towers*, dated January 2024. The Survey/Inspection was limited to the Couper Administration Tower.

3.0 RECORD REVIEW

No previous sampling data was available for review at the time of the Survey/Inspection.

4.0 SITE INSPECTION

The Survey/Inspection began with a visual assessment to identify homogeneous areas (HAs) that exist within the proposed renovation areas. The United States Environmental Protection Agency (USEPA) Asbestos Hazard Emergency Response Act (AHERA) regulations define an HA as, "…an area of surfacing material, thermal system insulation material, or miscellaneous material that is uniform in color and texture." Further, HAs should be collected from each construction vintage (age) independently, even if newly constructed.

The Inspectors identified HAs that were present in each inspected location. Each HA was given a number corresponding to the identified material. HA numbers used by RE&LS in this Survey/Inspection were given the following alpha-numeric coding:

1A	Homogeneous Area Number 1, sample A (A, B, C, etc. refer to the total amount of samples collected for that HA based on AHERA sampling protocol)

Given this alpha-numeric coding, sample 1A can be identified as *Light Gray Window Caulk*, first sample. The areas of inspection applicable to this report are shown on the Sample Location Plans in Attachment A. HA numbers used for asbestos bulk sampling are listed in Table 2.

Fifteen (15) HAs, based on color, texture, date of construction and historical laboratory data were identified, of which thirty (30) samples were collected and submitted to Paradigm Environmental Services, Inc. (Paradigm) for asbestos analysis.

TABLE 2 – HOMOGENEOUS AREAS

Homogeneous Area No. (HA)	Material Description
1	Light Gray Window Caulk
2	Black Pliable Window Glazing Compound
3	White/Gray Panel Glazing Compound
4	White Ceramic Tile Grout
5	Gray Ceramic Tile Grout
6	Black Tar Paper
7	Gray Door Caulk
8	Gray/Tan Sidelight Caulk
9	Gray 2'x2' Acoustical Ceiling Tile
10	Gray/Tan Window Caulk
11	White Crumbly Window Glaze Compound

Homogeneous Area No. (HA)	Material Description
12	Black Vapor Barrier
13	White Terrazzo
14	Gray Grout
15	White Terrazzo

5.0 ASBESTOS BULK SAMPLING

RE&LS is a New York State Licensed Asbestos Contractor employing New York State Department of Health (NYSDOH)/USEPA Certified Asbestos Inspectors. Asbestos bulk sampling procedures were performed in compliance with all applicable Occupational Safety and Health Administration (OSHA), USEPA, and New York State (NYS) sampling protocols.

Bulk sample analysis was performed by Paradigm, an NYSDOH-approved laboratory. Friable samples were analyzed using NYS Environmental Laboratory Approval Program (ELAP) Method EPA 600/M4/82/020 Polarized Light Microscopy (PLM). Non-friable organically bound (NOB) samples were analyzed using NYS ELAP Method 198.6 PLM and, if found to be less than or equal to 1% asbestos by weight, NYS ELAP Method 198.4 Transmission Electron Microscopy (TEM). A copy of Paradigm's Certification is included in Attachment C.

6.0 ASBESTOS-CONTAINING MATERIALS AND LOCATIONS

ACMs were identified within the proposed renovation areas.

Table 3 identifies materials determined to be asbestos-containing along with their description, sample number, asbestos content, and approximate quantity. Locations of ACMs are shown on the Asbestos Location Plans in Attachment B.

TABLE 3 – ASBESTOS-CONTAINING MATERIALS AND LOCATIONS

Homogeneous Area No. (HA)	Homogeneous Area Description	Location	Sample Numbers	Asbestos Content and Type of Analysis	Approximate Quantity
2	Black Pliable Window Glazing Compound	West Elevation Window Glass	2A 2B	Chrysotile 2.3% PLM Chrysotile 3.3% PLM	10 SF
3	White/Gray Panel Glazing Compound	South Elevation Window Glass	3A 3B	Chrysotile 2.8% PLM Chrysotile 2.5% PLM	10 SF
6	Black Tar Paper	East Elevation Behind Brick	6A 6B	Chrysotile 3.1% PLM Chrysotile 2.6% PLM	TBD
8	Gray/Tan Sidelite Caulk	Entrance Sidelite to Brick (Left/Right)	8A 8B	Chrysotile 1.8% PLM Chrysotile 3.9% PLM	8 SF
10	Gray/Tan Window Caulk	Wing Window Frame to Brick	10A 10B	Chrysotile 1.6% PLM Chrysotile 3.2% PLM	8 SF
12	Black Vapor Barrier	Wing Subgrade on Foundation	12A 12B	Chrysotile 12% PLM Chrysotile 9.2% PLM	TBD

PLM: Polarized Light Microscopy
SF: Square Feet

7.0 LIMITATIONS OF THE INVESTIGATION

The Survey/Inspection included the spaces outlined in Section 2.0 Project Overview above. Suspect ACMs, not identified in this Survey/Inspection report, discovered during demolition or renovation activities shall be assumed to contain asbestos until laboratory analysis proves otherwise.

8.0 CONCLUSIONS

A Limited Pre-Renovation Asbestos Survey/Inspection was conducted at SUNY Binghamton Couper Administration Tower, 4400 Vestal Parkway East, Binghamton, New York 13850. The Survey/Inspection was based on the scope items as described in Section 2.0 Project Overview above.

ACMs have been identified in the proposed renovation areas. Locations of ACMs are shown on the Asbestos Location Plans in Attachment B.

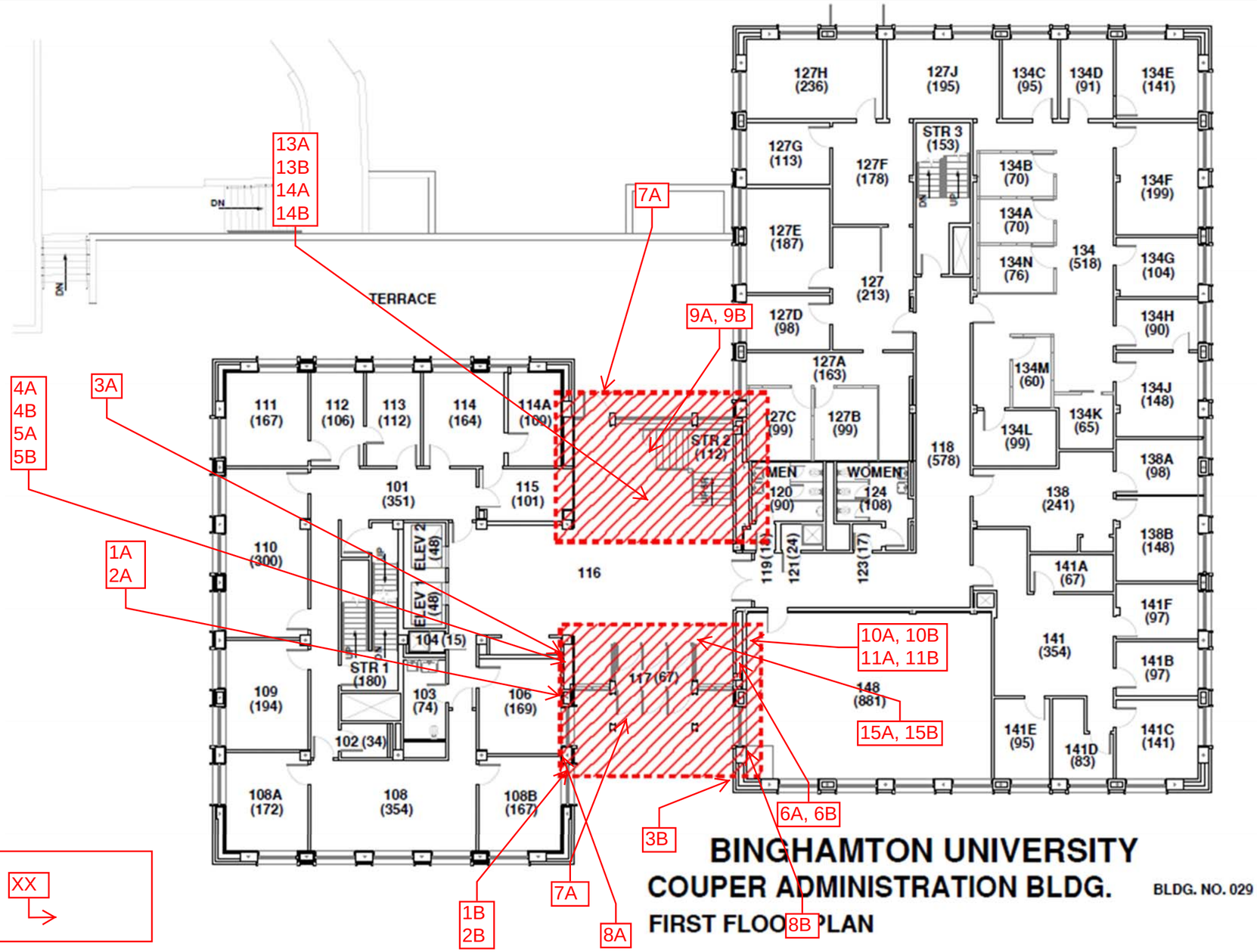
No demolition, renovation, remodeling, or repair work shall commence by any owner or owner's agent in areas where ACMs and/or suspect ACMs exist prior to the completion of asbestos abatement. The Construction Manager shall notify all subcontractors of the presence and locations of ACMs and suspect ACMs consistent with OSHA regulation 29 CFR 1926.1101. Suspect ACMs, not identified in this Survey/Inspection report, discovered during renovation or demolition activities shall be assumed to contain asbestos until laboratory analysis proves otherwise.

ATTACHMENT A

Areas of Inspection/Bulk Sample Location Plans

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850



RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618
TL: (585) 223-3660 FX (585) 697-1764

SUNY BINGHAMTON
COUPER ADMINISTRATION BUILDING
LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

ATTACHMENT A: AREAS OF INSPECTION/BULK SAMPLE LOCATION PLANS

PROJECT NO.	DATE:
43-24-238-A	APRIL 2025
SCALE: N.T.S.	DRAWING NO: DWG-01

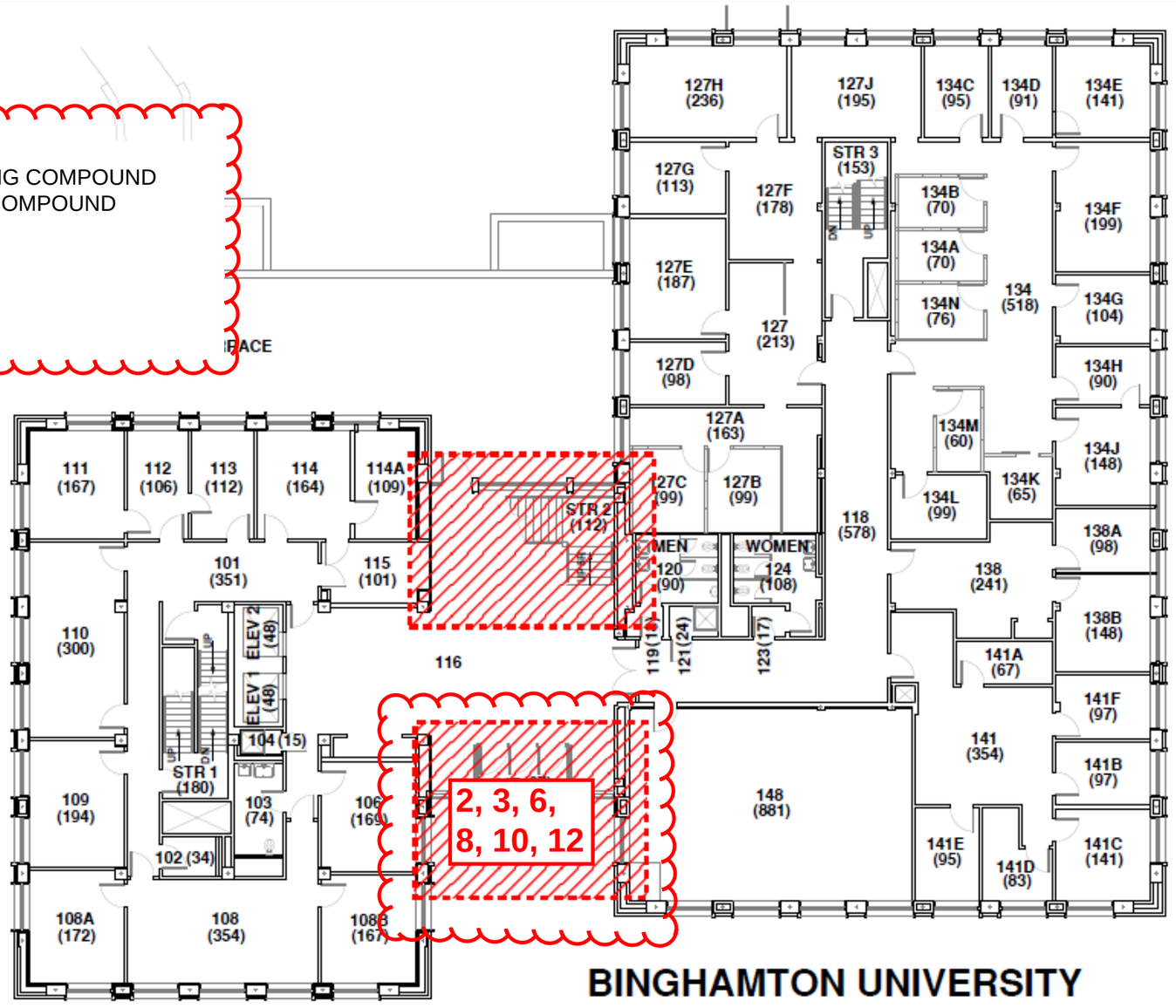
ATTACHMENT B

Asbestos-Containing Materials Location Plans

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850

LEGEND
2 - BLACK PLIABLE WINDOW GLAZING COMPOUND
3 - WHITE/GRAY PALNEL GLAZING COMPOUND
6 - BLACK TAR PAPER
8 - GRAY/TAN SIDELITE CAULK
10 - GRAY/TAN WINDOW CAULK
12 - BLACK VAPOR BARRIER



BINGHAMTON UNIVERSITY
COUPER ADMINISTRATION BLDG. BLDG. NO. 029
FIRST FLOOR PLAN

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618
TL: (585) 223-3660 FX (585) 697-1764

SUNY BINGHAMTON
COUPER ADMINISTRATION BUILDING
LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

ATTACHMENT B: ASBESTOS-CONTAINING MATERIAL LOCATION PLANS

PROJECT NO. 43-24-238-A

DATE: APRIL 2025

SCALE: N.T.S.

DRAWING NO: DWG-01

ATTACHMENT C

Asbestos-Containing Materials Summary Table

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850

Asbestos-Containing Materials Summary Table						
Homogeneous Area No. (HA)	**Homogeneous Area Description**	**Location**	**Sample Numbers**	**Asbestos Content and Type of Analysis**	**Approximate Quantity**	**Note on Asbestos Location Plans (Attachment B)**
2	Black Pliable Window Glazing Compound	West Elevation Window Glass	2A 2B	Chrysotile 2.3% PLM Chrysotile 3.3% PLM	10 SF	2
3	White/Gray Panel Glazing Compound	South Elevation Window Glass	3A 3B	Chrysotile 2.8% PLM Chrysotile 2.5% PLM	10 SF	3
6	Black Tar Paper	East Elevation Behind Brick	6A 6B	Chrysotile 3.1% PLM Chrysotile 2.6% PLM	TBD	6
8	Gray/Tan Sidelite Caulk	Entrance Sidelite to Brick (Left/Right)	8A 8B	Chrysotile 1.8% PLM Chrysotile 3.9% PLM	8 SF	8
10	Gray/Tan Window Caulk	Wing Window Frame to Brick	10A 10B	Chrysotile 1.6% PLM Chrysotile 3.2% PLM	8 SF	10
12	Black Vapor Barrier	Wing Subgrade on Foundation	12A 12B	Chrysotile 12% PLM Chrysotile 9.2% PLM	TBD	12

PLM: Polarized Light Microscopy
SF: Square Feet

ATTACHMENT D

Asbestos-Containing Materials Photo Log

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850

Asbestos-Containing Materials Photo Log
SUNY Binghamton Couper Administration Tower

Photo 1	
HA# 2 BLACK PLIABLE WINDOW GLAZING COMPOUND 2.3 % CHRYSOTILE - PLM 3.3 % CHRYSOTILE - PLM	

Photo 2	
HA# 3 WHITE/GRAY PANEL GLAZING COMPOUND 2.8 % CHRYSOTILE - PLM 2.5 % CHRYSOTILE - PLM	

Photo 3	
HA# 6 BLACK TAR PAPER 3.1% CHRYSOTILE - PLM 2.6% CHRYSOTILE - PLM	

Photo 4	No Picture Available
HA# 8 GRAY/TAN SIDELITE CAULK 1.8% CHRYSOTILE - PLM 3.9% CHRYSOTILE - PLM	

Photo 5	No Picture Available
HA# 10 GRAY/TAN WINDOW CAULK 1.6% CHRYSOTILE - PLM 3.2% CHRYSOTILE - PLM	

Photo 6	No Picture Available
HA# 12 BLACK VAPOR BARRIER 12% CHRYSOTILE - PLM 9.2% CHRYSOTILE - PLM	

ATTACHMENT E

Analytical Reports and Chain of Custody Forms

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850

PARADIGM
ENVIRONMENTAL SERVICES

179 Lake Avenue, Rochester, NY 14608 Office: (585) 647-2530

PLM & TEM BULK ASBESTOS ANALYSIS REPORT
via NYSDOH ELAP Method 198.1,198.4 and 198.6

Client: Ravi Engineering & Land Surveying, P.C.
Location: Binghamton University-Administration Tower
Binghamton, New York
Sample Date: 11/19/2024

Job No: 9214-24
Page: 1 of 6

Client ID	Lab ID	Sampling Location	Description	PLM Asbestos Fibers Type & Percentage	PLM Total Asbestos	NOB	TEM Asbestos Fibers Type & Percentage	TEM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage	Non-Fibrous Matrix Material %
1-A	80741	West Elevation Window Frame to Brick	Light Gray Window Caulk	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
1-B	80742	South Elevation Window Frame to Brick	Light Gray Window Caulk	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
2-A	80743	West Elevation Window Glass	Black Pliable Window Glazing Compound	Chrysotile 2.3%	2.3%	√	Not Required	N/A	None Detected	97.7%
2-B	80744	South Elevation Window Glass	Black Pliable Window Glazing Compound	Chrysotile 3.3%	3.3%	√	Not Required	N/A	None Detected	96.7%
3-A	80745	West Elevation Metal Transom	White/Gray Panel Glazing Compound	Chrysotile 2.8%	2.8%	√	Not Required	N/A	None Detected	97.2%
3-B	80746	South Elevation Metal Transom	White/Gray Panel Glazing Compound	Chrysotile 2.5%	2.5%	√	Not Required	N/A	None Detected	97.5%
4-A	80747	West Elevation Overhang	White Ceramic Tile Grout	None Detected	0%		Not Required	N/A	None Detected	100%
4-B	80748	West Elevation Overhang	White Ceramic Tile Grout	None Detected	0%		Not Required	N/A	None Detected	100%
5-A	80749	West Elevation Overhang	Gray Ceramic Tile Cement	None Detected	0%		Not Required	N/A	None Detected	100%
5-B	80750	West Elevation Overhang	Gray Ceramic Tile Cement	None Detected	0%		Not Required	N/A	None Detected	100%

KEY TO NOB COLUMN SYMBOLS
No Symbol in the NOB column denotes sample analyzed by ELAP Method 198.1 (PLM).
√ NOB (non-friable organically bound)denotes material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
Ṽ denotes material analyzed by ELAP Method 198.6 (PLM) per NYSDOH. This Method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite.
 # denotes friable material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
X denotes sample prepped only by ELAP Method 198.6.
**** Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.**

PLM Bulk Asbestos Analysis by New York State Department of Health, ELAP Method 198.1 ,198.4 and 198.6 ("Polarized Light Microscopy and Transmission Electron Microscopy Methods for Identifying and Quantitating Asbestos in Bulk Samples and in Non-Friable Organically Bound Bulk Samples.")or EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab Code 200530-0).

NVLAP TESTING
Lab Code 200530-0 for PLM Analysis

ELAP ID No.: 10958

Microscope: Olympus BH-2 #211874
PLM Analyst: T. Bush
Date of Analysis: 12/4/2024

Microscope: JEOL-100CX-II #EM-156094-87
TEM Analyst: F. Weinman
Date of Analysis: 12/5/2024

Laboratory Results Approved By: Fernanda Weinman
Asbestos Technical Director or Designee

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PARADIGM
ENVIRONMENTAL SERVICES

179 Lake Avenue, Rochester, NY 14608 Office: (585) 647-2530

PLM & TEM BULK ASBESTOS ANALYSIS REPORT
via NYSDOH ELAP Method 198.1,198.4 and 198.6

Client: Ravi Engineering & Land Surveying, P.C.
Location: Binghamton University-Administration Tower
Binghamton, New York
Sample Date: 11/19/2024

Job No: 9214-24

Client ID	Lab ID	Sampling Location	Description	PLM Asbestos Fibers Type & Percentage	PLM Total Asbestos	NOB	TEM Asbestos Fibers Type & Percentage	TEM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage	Non-Fibrous Matrix Material %
6-A	80751	East Elevation Behind Brick	Black Tar Paper	Chrysotile 3.1%	3.1%	√	Not Required	N/A	None Detected	96.9%
6-B	80752	East Elevation Behind Brick	Black Tar Paper	Chrysotile 2.6%	2.6%	√	Not Required	N/A	None Detected	97.4%
7-A	80753	Lobby Entrance South Door to Metal Frame	Gray Door Caulk	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
7-B	80754	Lobby Entrance North Door to Metal Frame	Gray Door Caulk	Inconclusive No Asbestos Detected	0%	√	None Detected	<1.0%	None Detected	100%
8-A	80755	Entrance Sidelite to Brick (Left)	Gray/Tan Sidelite Caulk	Chrysotile 1.8%	1.8%	√	Not Required	N/A	None Detected	98.2%
8-B	80756	Entrance Sidelite to Brick (Right)	Gray/Tan Sidelite Caulk	Chrysotile 3.9%	3.9%	√	Not Required	N/A	None Detected	96.1%
9-A	80757	Lobby Ceiling	Gray Fibrous 2'x2' Acoustical Ceiling Tile	Inconclusive No Asbestos Detected	0%	#	None Detected	<1.0%	Mineral Wool 10%	90%
9-B	80758	Lobby Ceiling	Gray Fibrous 2'x2' Acoustical Ceiling Tile	Inconclusive No Asbestos Detected	0%	#	None Detected	<1.0%	Mineral Wool 10%	90%
10-A	80759	Wing Window Frame to Brick	Gray/Tan Window Caulk	Chrysotile 1.6%	1.6%	√	Not Required	N/A	None Detected	98.4%
10-B	80760	Wing Window Frame to Brick	Gray/Tan Window Caulk	Chrysotile 3.2%	3.2%	√	Not Required	N/A	None Detected	96.8%

KEY TO NOB COLUMN SYMBOLS
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√ NOB (non-friable organically bound)denotes material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
V̄ denotes material analyzed by ELAP Method 198.6 (PLM) per NYSDOH. This Method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite.
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X denotes sample prepped only by ELAP Method 198.6.
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NVLAP TESTING

ELAP ID No.: 10958

Lab Code 200530-0 for PLM Analysis

Microscope: Olympus BH-2 #211874
PLM Analyst: T. Bush
Date of Analysis: 12/4/2024

Microscope: JEOL-100CX-II #EM-156094-87
TEM Analyst: A. Voldbakken
Date of Analysis: 12/5/2024

Laboratory Results Approved By:
Asbestos Technical Director or Designee Fernanda Weinman

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PARADIGM
ENVIRONMENTAL SERVICES

179 Lake Avenue, Rochester, NY 14608 Office: (585) 647-2530

PLM & TEM BULK ASBESTOS ANALYSIS REPORT
via NYSDOH ELAP Method 198.1,198.4 and 198.6

Client: Ravi Engineering & Land Surveying, P.C.
Location: Binghamton University-Administration Tower
Binghamton, New York
Sample Date: 11/19/2024

Job No: 9214-24
Page: 3 of 6

Client ID	Lab ID	Sampling Location	Description	PLM Asbestos Fibers Type & Percentage	PLM Total Asbestos	NOB	TEM Asbestos Fibers Type & Percentage	TEM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage	Non-Fibrous Matrix Material %
11-A	80761	Wing Window Glass	White Crumbly Window Glaze Compound	Inconclusive No Asbestos Detected	0%	#	None Detected	<1.0%	None Detected	100%
11-B	80762	Wing Window Glass	White Crumbly Window Glaze Compound	Inconclusive No Asbestos Detected	0%	#	None Detected	<1.0%	None Detected	100%
12-A	80763	Wing Subgrade on Foundation	Black Fibrous Vapor Barrier	Chrysotile 12%	12%	√	Not Required	N/A	None Detected	88%
12-B	80764	Wing Subgrade on Foundation	Black Vapor Barrier	Chrysotile 9.2%	9.2%	√	Not Required	N/A	None Detected	90.8%
13-A	80765	Lobby Floor	White Terrazzo	None Detected	0%		Not Required	N/A	None Detected	100%
13-B	80766	Lobby Floor	White Terrazzo	None Detected	0%		Not Required	N/A	None Detected	100%
14-A	80767	Lobby Floor	Gray Grout	None Detected	0%		Not Required	N/A	None Detected	100%
14-B	80768	Lobby Floor	Gray Grout	None Detected	0%		Not Required	N/A	None Detected	100%

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No Symbol in the NOB column denotes sample analyzed by ELAP Method 198.1 (PLM).
√ NOB (non-friable organically bound)denotes material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
V̄ denotes material analyzed by ELAP Method 198.6 (PLM) per NYSDOH. This Method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite.
 # denotes friable material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
X denotes sample prepped only by ELAP Method 198.6.
**** Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.**

PLM Bulk Asbestos Analysis by New York State Department of Health, ELAP Method 198.1 ,198.4 and 198.6 ("Polarized Light Microscopy and Transmission Electron Microscopy Methods for Identifying and Quantitating Asbestos in Bulk Samples and in Non-Friable Organically Bound Bulk Samples.")or EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab Code 200530-0).

NVLAP TESTING

ELAP ID No.: 10958

Lab Code 200530-0 for PLM Analysis

Microscope: Olympus BH-2 #211874
PLM Analyst: T. Bush
Date of Analysis: 12/4/2024

Microscope: JEOL-100CX-II #EM-156094-87
TEM Analyst: F. Weinman
Date of Analysis: 12/5/2024

Laboratory Results Approved By:
Asbestos Technical Director or Designee Fernanda Weinman

Paradigm Environmental Services, Inc. is not responsible for the data supplied by an independent inspector. National Institute of Standards and Technology Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the laboratory. This PLM report relates ONLY to the items tested. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. Quality control data (including 95% confidence limits and/or laboratory and analysts' precision) is available upon request. All samples that were analyzed were received in acceptable condition.

CHAIN OF CUSTODY FOR BULK ASBESTOS ANALYSIS

PARADIGM

[X] 179 Lake Avenue, Rochester, New York 14608 — Office: 585-647-2530
[ ] 1815 Love Road, Grand Island , New York 14072 — Office: 716-775-5777

Ravi Rates

Client: Ravi Engineering & Land Survey P.C.	**Contact:** Tony Hill	**OFFICE USE ONLY**
Phone Number: (585) 223-3660	**Email Address for Data:** Ahill@ravieng.com	**Job #:** 9214-24
Client Mailing Address: 2110 S. Clinton Ave, Suite 1	**Results To** Tony Hill	**Turn Around Time:** 1 [ ] 2 [ ] 3 [ ] 5 [X] 12.5 Other [ ]	**Page** 1 **of** 3
Rochester, New York 14618	**Date Sampled** 11/19/2024	**Material Type/Quantity:** Friable ___ NOB ___ TEM ___	**Date Logged In:** 11.26.24
Ravi Project # 43-24-238	**Project Location:** Binghamton University - Administration Tower, Binghamton, New York		**Logged In By:** KA 1 of 3

	Client ID	Lab ID	Sampling Location	Color	Material Size	Type of Material
1	1A	80741	W. Elev. Window Frame to brick	Lt. GRY		Window Caulk
2	1B	742	S. Elev. Window Frame to brick	↓		↓
3	2A	743	W. Elevation window glass	BLK		Pliable window glazing compound
4	2B	744	S. " "	↓		↓
5	3A	745	W. Elevation metal transom	WH/GRY		Panel glazing compound
6	3B	746	S. " "	↓		↓
7	4A	747	W. Elevation over hang	WH		ceramic tile grout
8	4B	748	↓	↓		↓
9	5A	749		GRY		Ceramic tile cement
#	5B	750	↓	↓		↓

Sampled By: [signature]	**Date:** 11/19/24
Transported to Paradigm By: [signature]	**Date:** 11/19/24
Received By: [signature]	**Date:** 11.26.24 1530

By signing this form, client agrees to Paradigm Terms and Conditions (reverse).

All samples will be analyzed by the appropriate New York State Department of Health methods (198.1,198.4 and 198.6) unless EPA 600/M4/82/020 per 40 CFR 763 and/or EPA 600/R-93/116 methods are requested.

CHECK TO AUTOMATICALLY PERFORM TEM ON NOBS [x]
or provide TEM contact name:
TOTAL NUMBER OF SAMPLES ON ALL CHAINS OF CUSTODY:

pg 1 of 3

CHAIN OF CUSTODY FOR BULK ASBESTOS ANALYSIS

PARADIGM

Ravi Rates

[X] 179 Lake Avenue, Rochester, New York 14608 — Office: 585-647-2530
[ ] 1815 Love Road, Grand Island , New York 14072 — Office: 716-775-5777

Client: Ravi Engineering & Land Survey P.C.	**Contact:** Tony Hill
Phone Number: (585) 223-3660	**Email Address for Data:** Ahill@ravieng.com
Client Mailing Address: 2110 S. Clinton Ave, Suite 1	**Results To** Tony Hill
Rochester, New York 14618	**Date Sampled** 11/19/2024
Ravi Project # 43-24-238	**Project Location:** Binghamton University - Administration Tower, Binghamton, New York

Turn Around Time: 1 [ ] 2 [ ] 3 [ ] 5 [X] 12.5 Other [ ]

Material Type/Quantity: Friable ___ NOB ___ TEM ___

OFFICE USE ONLY
Job #: 9214-24
Page 5 of 6
Date Logged In: 11.26.24
Logged In By: KA 2of3

	Client ID	Lab ID	Sampling Location	Color	Material Size	Type of Material
1	6A	80751	E. Elev. behind brick	BLK		Tar paper
2	6B	752	↓	↓		↓
3	7A	753	Lobby Entrance S. door to metal frame	GRY		Door caulk
4	7B	754	↓ N. door	↓		↓
5	8A	755	Entrance sidelite to brick (left)	GRY/TAN		Sidelite caulk
6	8B	756	" " (Right)	↓		↓
7	9A	757	Lobby ceiling	GRY	2x2	Acoustical ceiling tile
8	9B	758	↓	↓	↓	↓
9	10A	759	Wing Window frame to brick	GRY/TAN		window caulk
#	10B	760	↓	↓		

Sampled By:	**Date:** 11/19/24
Transported to Paradigm By:	**Date:** 11/26/24
Received By:	**Date:** 11.26.24 1530

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All samples will be analyzed by the appropriate New York State Department of Health methods (198.1,198.4 and 198.6) unless EPA 600/M4/82/020 per 40 CFR 763 and/or EPA 600/R-93/116 methods are requested.

CHECK TO AUTOMATICALLY PERFORM TEM ON NOBS or provide TEM contact name:	X
TOTAL NUMBER OF SAMPLES ON ALL CHAINS OF CUSTODY:	

Pg 2of3

CHAIN OF CUSTODY FOR BULK ASBESTOS ANALYSIS

PARADIGM

Ravi Rates

[X] 179 Lake Avenue, Rochester, New York 14608 — Office: 585-647-2530
[ ] 1815 Love Road, Grand Island , New York 14072 — Office: 716-775-5777

Client: Ravi Engineering & Land Survey P.C.	**Contact:** Tony Hill
Phone Number: (585) 223-3660	**Email Address for Data:** Ahill@ravieng.com
Client Mailing Address: 2110 S. Clinton Ave, Suite 1 Rochester, New York 14618 Ravi Project # 43-24-238	**Results To** Tony Hill **Date Sampled** 11/19/2024 **Project Location:** Binghamton University - Administration Tower, Binghamton, New York
	Turn Around Time: 1 [ ] 2 [ ] 3 [ ] 5 [X] 12.5 Other [ ] **Material Type/Quantity:** Friable ___ NOB ___ TEM ___

OFFICE USE ONLY
Job #: 9214-24
Page 6 **of** 6
Date Logged In: 11.26.24
Logged In By: KA 3 of 3

	Client ID	Lab ID	Sampling Location	Color	Material Size	Type of Material
1	11A	807761	Wing window glass	WH		crumbly window glaze compound
2	11B	762	↓	↓		↓
3	12A	763	Wing subgrade on foundation	BLK		Vapor Barrier
4	12B	764	↓	↓		↓
5	13A	765	Lobby Floor	WH		TERRAZO
6	13B	766	↓	↓		↓
7	14A	767	↓	GRY		GROUT
8	14B	768	↓	↓		↓
9						
#						

Sampled By:	**Date:** 11/19/24
Transported to Paradigm By:	**Date:** 11/26/24
Received By:	**Date:** 11.26.24 1530

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All samples will be analyzed by the appropriate New York State Department of Health methods (198.1,198.4 and 198.6) unless EPA 600/M4/82/020 per 40 CFR 763 and/or EPA 600/R-93/116 methods are requested.

CHECK TO AUTOMATICALLY PERFORM TEM ON NOBS or provide TEM contact name:	x
TOTAL NUMBER OF SAMPLES ON ALL CHAINS OF CUSTODY:	

pg 3 of 3

PARADIGM
ENVIRONMENTAL SERVICES

179 Lake Avenue, Rochester, NY 14608 Office: (585) 647-2530

PLM & TEM BULK ASBESTOS ANALYSIS REPORT
via NYSDOH ELAP Method 198.1,198.4 and 198.6

Client: Ravi Engineering & Land Surveying, P.C.
Location: Binghamton University, Administration Tower
Binghamton, New York
Sample Date: 2/28/2025

Job No: 1897-25
Page: 1 of 2

Client ID	Lab ID	Sampling Location	Description	PLM Asbestos Fibers Type & Percentage	PLM Total Asbestos	NOB	TEM Asbestos Fibers Type & Percentage	TEM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage	Non-Fibrous Matrix Material %
15-A	18332	1st Floor Lobby Floor	White Terrazzo	None Detected	0%		Not Required	N/A	None Detected	100%
15-B	18333	1st Floor Lobby Floor	White Terrazzo	None Detected	0%		Not Required	N/A	None Detected	100%

KEY TO NOB COLUMN SYMBOLS
No Symbol in the NOB column denotes sample analyzed by ELAP Method 198.1 (PLM).
√ NOB (non-friable organically bound)denotes material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
V̄ denotes material analyzed by ELAP Method 198.6 (PLM) per NYSDOH. This Method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite.
 # denotes friable material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
X denotes sample prepped only by ELAP Method 198.6.
**** Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials.**
Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.

PLM Bulk Asbestos Analysis by New York State Department of Health, ELAP Method 198.1 ,198.4 and 198.6 ("Polarized Light Microscopy and Transmission Electron Microscopy Methods for Identifying and Quantitating Asbestos in Bulk Samples and in Non-Friable Organically Bound Bulk Samples.")or EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab Code 200530-0).

NVLAP TESTING

ELAP ID No.: 10958

Lab Code 200530-0 for PLM Analysis

Microscope: Olympus BH-2 #211874
PLM Analyst: T. Bush
Date of Analysis: 3/6/2025

Microscope: JEOL-100CX-II #EM-156094-87
TEM Analyst: N/A
Date of Analysis: N/A

Laboratory Results Approved By: Fernanda Weinman
Asbestos Technical Director or Designee

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CHAIN OF CUSTODY FOR BULK ASBESTOS ANALYSIS

PARADIGM

[X] 179 Lake Avenue, Rochester, New York 14608 — Office: 585-647-2530
[ ] 1815 Love Road, Grand Island , New York 14072 — Office: 716-775-5777

Ravi Rates

Client: Ravi Engineering & Land Survey P.C.	**Contact:** Tony Hill	**OFFICE USE ONLY**
Phone Number: (585) 223-3660	**Email Address for Data:** Ahill@ravieng.com	**Job #:** 1897-25
Client Mailing Address: 2110 S. Clinton Ave, Suite 1	**Results To** Tony Hill	**Turn Around Time:** 1 [ ] 2 [ ] 3 [ ] 5 [X] 3-12 Other [ ]	**Page** 2 of 2
Rochester, New York 14618	**Date Sampled** 2/28/2025	**Material Type/Quantity:** Friable ___ NOB ___ TEM ___	**Date Logged In:** 3.5.25
Ravi Project # 43-25-238A	**Project Location:** Binghatmon University - Administration Tower, Binghamton, New York		**Logged In By:** KA 1 of 1

	Client ID	Lab ID	Sampling Location	Color	Material Size	Type of Material
1	15A	18332	1st floor lobby floor	White		TERRAZZO
2	15B	333	↓	↓		↓
3						
4						
5						
6						
7						
8						
9						
#						

Sampled By: Tony Hill **Date:** 2/28/25

Transported to Paradigm By: [signature] **Date:** 3/5/25

Received By: [signature] **Date:** 3.5.25 1659

By signing this form, client agrees to Paradigm Terms and Conditions (reverse).

All samples will be analyzed by the appropriate New York State Department of Health methods (198.1,198.4 and 198.6) unless EPA 600/M4/82/020 per 40 CFR 763 and/or EPA 600/R-93/116 methods are requested.

CHECK TO AUTOMATICALLY PERFORM TEM ON NOBS [X]
or provide TEM contact name:

TOTAL NUMBER OF SAMPLES ON ALL CHAINS OF CUSTODY: [ ]

Pg 1 of 1

ATTACHMENT F

License and Certifications

LIMITED PRE-RENOVATION ASBESTOS SURVEY/INSPECTION

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850

WE ARE YOUR DOL

NEW YORK STATE | Department of Labor

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

ASBESTOS HANDLING LICENSE

Ravi Engineering and Land Surveying, P.C.
2110 South Clinton Ave., Suite 1, Rochester, NY, 14618

License Number: 29384
License Class: RESTRICTED
Date of Issue: 01/31/2025
Expiration Date: 02/28/2026
Duly Authorized Representative: Nagappa Ravindra

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

STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE

N.Y.S



ANTHONY HILL
CLASS(EXPIRES)
C ATEC (09/25) D INSP (09/25)
H PM (09/25) I PD (09/25)

CERT# 24-6LYFU-SHAB
DMV# 688601121

MUST BE CARRIED ON ASBESTOS PROJECTS

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2026
Issued April 01, 2025

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. STEVE DEVITO
PARADIGM ENVIRONMENTAL SERVICES INC
179 LAKE AVENUE
ROCHESTER, NY 14608

NY Lab Id No: 10958

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

Metals I	
Lead, Total	NIOSH 7303
Miscellaneous	
Asbestos	40 CFR 763 APX A No. III
	NIOSH 7402
Fibers	NIOSH 7400 A RULES
Polychlorinated Biphenyls	
PCBs and Aroclors	NIOSH 5503

Serial No.: 70339

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LIMITED PCB CAULK SURVEY

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850

Volume 2 of 3

Prepared For:

QPK Design, LLP
450 South Salina Street
Suite 225
Syracuse, NY 13202

Prepared By:

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618

April 2025

Project No. 43-24-238A

LIMITED PCB CAULK SURVEY

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850

Volume 2 of 3

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2.0 PROJECT OVERVIEW 1

3.0 PCB CAULK SAMPLING/FINDINGS 1

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5.0 RECOMMENDATIONS 1

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ATTACHMENT A *AREAS OF INSPECTION/BULK SAMPLE LOCATION PLANS*
ATTACHMENT B *ANALYTICAL REPORT AND CHAIN OF CUSTODY FORMS*
ATTACHMENT C *LABORATORY CERTIFICATION*

EXECUTIVE SUMMARY

Ravi Engineering & Land Surveying, P.C. (RE&LS) was retained by QPK Design, LLP (QPK) to conduct a Limited Polychlorinated Biphenyl (PCB) Caulk Survey at State University of New York Binghamton University Couper Administration Tower to support the proposed Couper Administration Tower renovation project, 4400 Vestal Parkway East, Binghamton, New York 13850. The Survey was conducted on November 19, 2024 & February 28, 2025.

The Survey included a visual assessment and collection of suspect caulks/sealants that would be impacted by the proposed renovation project. Caulks/sealants were sampled for PCB content to determine if special removal or disposal procedures are required.

The caulks/sealants that were sampled and analyzed for asbestos content (identified in Volume 1 of this report) were also sampled and analyzed for PCBs. Three (3) caulk/sealant samples were collected and submitted to Paradigm Environmental Services, Inc. for PCB analysis. None of the three (3) samples were determined to be PCB-containing at or above the USEPA threshold for bulk-product waste during the Survey.

1.0 INTRODUCTION

Ravi Engineering & Land Surveying, P.C. (RE&LS) was retained by QPK Design, LLP (QPK) to conduct a Limited Polychlorinated Biphenyl (PCB) Caulk Survey at State University of New York (SUNY) Binghamton Couper Administration Tower. The Survey was conducted on November 19, 2024 & February 28, 2025.

2.0 PROJECT OVERVIEW

The Survey was conducted to support the renovation project at SUNY Binghamton Couper Administration Tower. The scope of work was based on telephone and electronic correspondence between RE&LS and QPK in September 2024, a pre-bid walkthrough at SUNY Binghamton on July 15, 2024, and the document *SUCF Project Title: Study – Exterior Envelope Investigation – Library and Administration Towers*, dated January 2024. The Survey/Inspection was limited to the Couper Administration Tower proposed renovation areas.

3.0 PCB CAULK SAMPLING/FINDINGS

Three (3) caulk/sealant samples were collected and submitted to Paradigm Environmental Services, Inc. (Paradigm) for PCB analysis. A copy of Paradigm's Certification is included in Attachment C. Bulk sample locations are included in Attachment A. Table 1 identifies caulks/sealants that were sampled and analyzed for PCBs along with their sample number, material description, location, and PCB content.

Table 1 – PCB CAULK SAMPLING RESULTS

Sample Number	Material Description and Location	PCB Total Content (ppm)
1P	West Elevation Window Frame Caulk	BDL
7P	Lobby Door to Metal Frame Caulk	5.07
8P	South Elevation Sidelite to Brick Caulk	49.4

Note: The above identified caulks/sealants were also analyzed for asbestos content as identified in Volume 1 of this report.
ppm: Parts per Million
BDL: Below Detection Limit

None of the three (3) samples analyzed were found to be above the regulatory threshold for PCB bulk-product waste (≥50 parts per million; ppm). The United States Environmental Protection Agency (USEPA) defines PCB bulk-product waste as "waste derived from manufacturing products containing PCBs in a non-liquid state, at any concentration where the concentration at the time of designation for disposal was ≥50 ppm PCB."

4.0 LIMITATIONS OF INVESTIGATION

The Survey was based on the project scope as described in Section 2.0 Project Overview above. Non-destructive sampling techniques were employed during the Survey. Areas that were inaccessible were not sampled nor identified. Suspect caulks/sealants, not identified in this Survey report, discovered during renovation or demolition activities shall be assumed to be PCB-containing until laboratory analysis proves otherwise.

5.0 RECOMMENDATIONS

None of the caulks/sealants sampled and analyzed were determined to be PCB-containing above the USEPA threshold for bulk product waste.

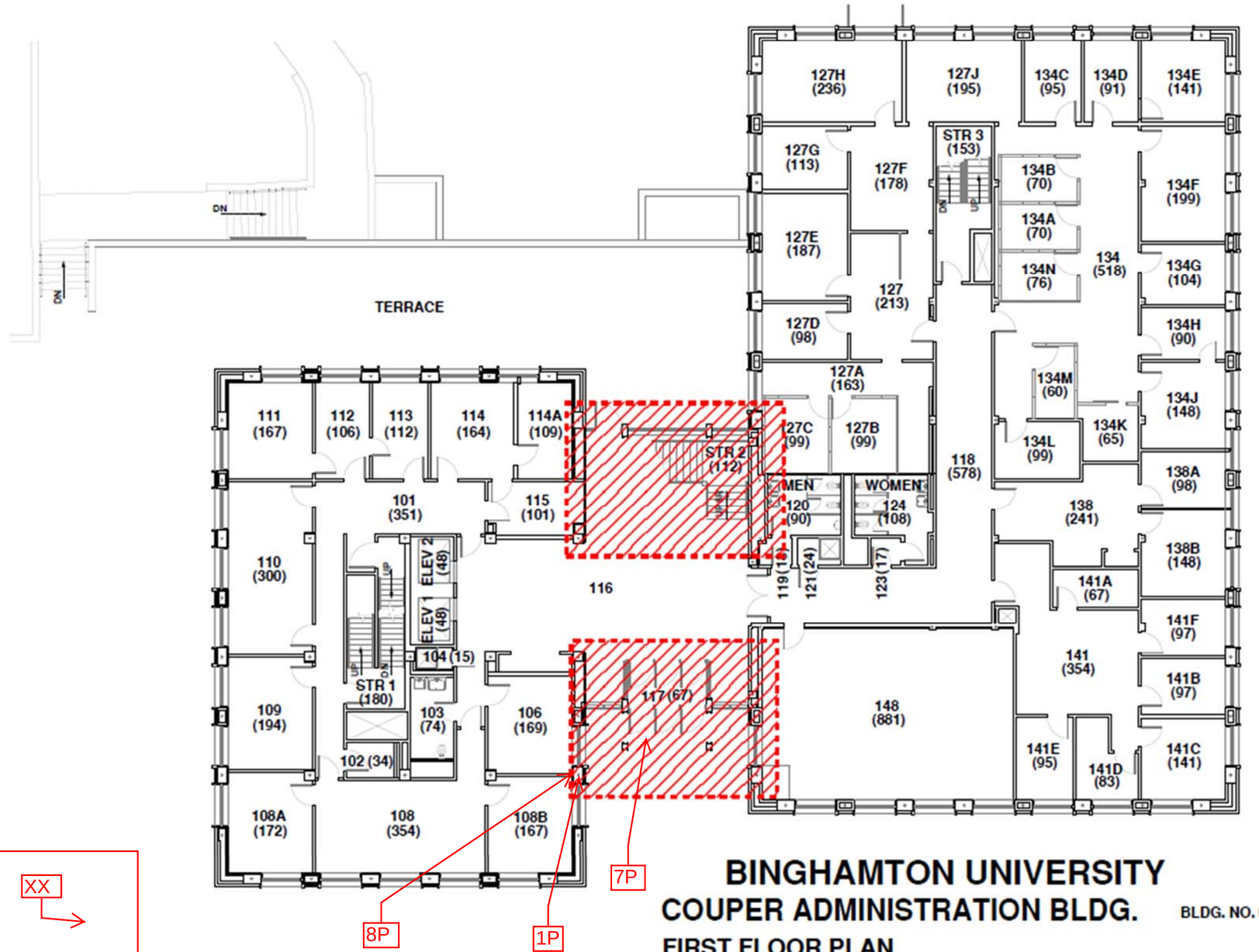
Suspect caulks/sealants, not identified in this Survey report, discovered during renovation or demolition activities shall be assumed to be PCB-containing until laboratory analysis proves otherwise.

ATTACHMENT A

Areas of Inspection/Bulk Sample Location Plans

LIMITED PCB CAULK SURVEY

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850



LEGEND
SAMPLE LOCATIONS XX

BINGHAMTON UNIVERSITY
COUPER ADMINISTRATION BLDG. BLDG. NO. 029
FIRST FLOOR PLAN

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618
TL: (585) 223-3660 FX (585) 697-1764

SUNY BINGHAMTON
COUPER ADMINISTRATION TOWER
LIMITED PCB CAULK SURVEY

ATTACHMENT A: AREAS OF INSPECTION/BULK SAMPLE LOCATION PLANS

PROJECT NO.	DATE:
43-24-238A	APRIL 2025
SCALE: N.T.S.	DRAWING NO: DWG-01

ATTACHMENT B

Analytical Report and Chain of Custody Forms

LIMITED PCB CAULK SURVEY

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850

PARADIGM
ENVIRONMENTAL SERVICES, INC

Analytical Report For

Ravi Engineering & Land Surveying, P.C.

For Lab Project ID

245598

Referencing

43-24-238 - Binghamton University - Admin Tower

Prepared

Wednesday, December 11, 2024

Any noncompliant QC parameters or other notes impacting data interpretation are flagged or documented on the final report or are noted below.

Emily Farmer

Certifies that this report has been approved by the Technical Director or Designee

179 Lake Avenue • Rochester, NY 14608 • (585) 647-2530 • Fax (585) 647-3311 • ELAP ID# 10958

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

PARADIGM ENVIRONMENTAL SERVICES, INC.

Lab Project ID: 245598

Client: **Ravi Engineering & Land Surveying, P.C.**

Project Reference: 43-24-238 - Binghamton University - Admin Tower

Sample Identifier: 1P - West Elev. - Window Frame

Lab Sample ID: 245598-01 **Date Sampled:** 11/19/2024

Matrix: Caulk **Date Received** 11/26/2024

PCBs

Analyte	Result	Units	Qualifier	Date Analyzed
PCB-1016	< 2.66	mg/Kg		12/6/2024 14:37
PCB-1221	< 2.66	mg/Kg		12/6/2024 14:37
PCB-1232	< 2.66	mg/Kg		12/6/2024 14:37
PCB-1242	< 2.66	mg/Kg		12/6/2024 14:37
PCB-1248	< 2.66	mg/Kg		12/6/2024 14:37
PCB-1254	< 2.66	mg/Kg		12/6/2024 14:37
PCB-1260	< 2.66	mg/Kg		12/6/2024 14:37
PCB-1262	< 2.66	mg/Kg		12/6/2024 14:37
PCB-1268	< 2.66	mg/Kg		12/6/2024 14:37

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Tetrachloro-m-xylene	**68.1**	16.1 - 102		12/6/2024 14:37

Method Reference(s): EPA 8082A
EPA 3546

Preparation Date: 12/4/2024

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

PARADIGM
ENVIRONMENTAL SERVICES, INC.

Lab Project ID: 245598

Client: **Ravi Engineering & Land Surveying, P.C.**

Project Reference: 43-24-238 - Binghamton University - Admin Tower

Sample Identifier: 7P - Lobby Door - Door to Met. Frame
Lab Sample ID: 245598-02 **Date Sampled:** 11/19/2024
Matrix: Solid **Date Received** 11/26/2024

PCBs

Analyte	Result	Units	Qualifier	Date Analyzed
PCB-1016	< 3.25	mg/Kg		12/10/2024 15:32
PCB-1221	< 3.25	mg/Kg		12/10/2024 15:32
PCB-1232	< 3.25	mg/Kg		12/10/2024 15:32
PCB-1242	< 3.25	mg/Kg		12/10/2024 15:32
PCB-1248	< 3.25	mg/Kg		12/10/2024 15:32
PCB-1254	**5.07**	mg/Kg		12/10/2024 15:32
PCB-1260	< 3.25	mg/Kg		12/10/2024 15:32
PCB-1262	< 3.25	mg/Kg		12/10/2024 15:32
PCB-1268	< 3.25	mg/Kg		12/10/2024 15:32

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Tetrachloro-m-xylene	**55.2**	16.1 - 102		12/10/2024 15:32

Method Reference(s): EPA 8082A
EPA 3546
Preparation Date: 12/4/2024

PARADIGM
ENVIRONMENTAL SERVICES, INC.

Lab Project ID: 245598

Client: **Ravi Engineering & Land Surveying, P.C.**

Project Reference: 43-24-238 - Binghamton University - Admin Tower

Sample Identifier: 8P - South Elevation - Sidelite to Brick
Lab Sample ID: 245598-03 **Date Sampled:** 11/19/2024
Matrix: Solid **Date Received** 11/26/2024

PCBs

Analyte	Result	Units	Qualifier	Date Analyzed
PCB-1016	< 4.27	mg/Kg		12/6/2024 01:15
PCB-1221	< 4.27	mg/Kg		12/6/2024 01:15
PCB-1232	< 4.27	mg/Kg		12/6/2024 01:15
PCB-1242	< 4.27	mg/Kg		12/6/2024 01:15
PCB-1248	< 4.27	mg/Kg		12/6/2024 01:15
PCB-1254	**49.4**	mg/Kg		12/6/2024 01:15
PCB-1260	< 4.27	mg/Kg		12/6/2024 01:15
PCB-1262	< 4.27	mg/Kg		12/6/2024 01:15
PCB-1268	< 4.27	mg/Kg		12/6/2024 01:15

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
Tetrachloro-m-xylene	**67.5**	16.1 - 102		12/6/2024 01:15

Method Reference(s): EPA 8082A
EPA 3546
Preparation Date: 12/4/2024

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

Analytical Report Appendix

The reported results relate only to the samples as they have been received by the laboratory.

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All soil/sludge samples have been reported on a dry weight basis, unless qualified "reported as received". Other solids are reported as received.

Low level Volatiles blank reports for soil/solid matrix are based on a nominal 5 gram weight. Sample results and reporting limits are based on actual weight, which may be more or less than 5 grams.

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"E" = Result has been estimated, calibration limit exceeded.
"H" = Denotes a parameter analyzed outside of holding time.
"Z" = See case narrative.
"D" = Sample, Laboratory Control Sample, or Matrix Spike Duplicate results above Relative Percent Difference limit.
"M" = Matrix spike recoveries outside QC limits. Matrix bias indicated.
"B" = Method blank contained trace levels of analyte. Refer to included method blank report.
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"L" = Laboratory Control Sample recovery outside accepted QC limits.
"P" = Concentration differs by more than 40% between the primary and secondary analytical columns.
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"" = Indicates any recoveries outside associated acceptance windows. Surrogate outliers in samples are presumed matrix effects. LCS demonstrates method compliance unless otherwise noted.*
"(1)" = Indicates data from primary column used for QC calculation.
"A" = denotes a parameter for which ELAP does not offer approval as part of their laboratory certification program.
"F" = denotes a parameter for which Paradigm does not carry certification, the results for which should therefore only be used where ELAP certification is not required, such as personal exposure assessment.

GENERAL TERMS AND CONDITIONS
LABORATORY SERVICES

These Terms and Conditions embody the whole agreement of the parties in the absence of a signed and executed contract between the Laboratory (LAB) and Client. They shall supersede all previous communications, representations, or agreements, either verbal or written, between the parties. The LAB specifically rejects all additional, inconsistent, or conflicting terms, whether printed or otherwise set forth in any purchase order or other communication from the Client to the LAB. The invalidity or unenforceability in whole or in part of any provision, term or condition hereof shall not affect in any way the validity or enforceability of the remainder of the Terms and Conditions. No waiver by LAB of any provision, term, or condition hereof or of any breach by or obligation of the Client hereunder shall constitute a waiver of such provision, term, or condition on any other occasion or a waiver of any other breach by or obligation of the Client. This agreement shall be administered and interpreted under the laws of the state which services are procured.

Warranty. Recognizing that the nature of many samples is unknown and that some may contain potentially hazardous components, LAB warrants only that it will perform testing services, obtain findings, and prepare reports in accordance with generally accepted analytical laboratory principles and practices at the time of performance of services. LAB makes no other warranty, express or implied.

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LAB shall have no liability, obligation, or responsibility of any kind for losses, costs, expenses, or other damages (including but not limited to any special, direct, incidental or consequential damages) with respect to LAB's services or results.
All results provided by LAB are strictly for the use of its clients and LAB is in no way responsible for the use of such results by clients or third parties. All reports should be considered in their entirety, and LAB is not responsible for the separation, detachment, or other use of any portion of these reports. Client may not assign the lab report without the written consent of the LAB.
Client covenants and agrees, at its/his/her sole expense, to indemnify, protect, defend, and save harmless the LAB from and against any and all damages, losses, liabilities, obligations, penalties, claims, litigation, demands, defenses, judgments, suits, actions, proceedings, costs, disbursements and/or expenses (including, without limitation attorneys' and experts' fees and disbursements) of any kind whatsoever which may at any time be imposed upon, incurred by or asserted or awarded against client relating to, resulting from or arising out of (a) the breach of this agreement by this client, (b) the negligence of the client in handling, delivering or disclosing any hazardous substance, (c) the violation of the Client of any applicable law, (d) non-compliance by the Client with any environmental permit or (e) a material misrepresentation in disclosing the materials to be tested.

Hazard Disclosure. Client represents and warrants that any sample delivered to LAB will be preceded or accompanied by complete written disclosure of the presence of any hazardous substances known or suspected by Client. Client further warrants that any sample containing any hazardous substance that is to be delivered to LAB will be packaged, labeled, transported, and delivered properly and in accordance with applicable laws.

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LAB reserves the absolute right, exercisable at any time, to refuse to receive delivery of, refuse to accept, or revoke acceptance of any sample, which, in the sole judgment of LAB (a) is of unsuitable volume, (b) may be or become unsuitable for or may pose a risk in handling, transport, or processing for any health, safety, environmental or other reason whether or not due to the presence in the sample of any hazardous substance, and whether or not such presence has been disclosed to LAB by Client or (c) if the condition or sample date make the sample unsuitable for analysis.

Legal Responsibility. LAB is solely responsible for performance of this contract, and no affiliated company, director, officer, employee, or agent shall have any legal responsibility hereunder, whether in contract or tort including negligence.

Assignment. LAB may assign its performance obligations under this contract to other parties, as it deems necessary. LAB shall disclose to Client any assignee (subcontractor) by ELAP ID # on the submitted final report.

Force Majeure. LAB shall have no responsibility or liability to the Client for any failure or delay in performance by LAB, which results in whole or in part from any cause or circumstance beyond the reasonable control of LAB. Such causes and circumstances shall include, but not limited to, acts of God, acts or orders of any government authority, strikes or other labor disputes, natural disasters, accidents, wars, civil disturbances, difficulties or delays in transportation, mail or delivery services, inability to obtain sufficient services or supplies from LAB's usual suppliers, or any other cause beyond LAB's reasonable control.

Law. This contract shall be continued under the laws of the State of New York without regard to its conflicts of laws provision.

1 of 2

179 Lake Avenue, Rochester, NY 14608 Office (585) 647-2530 Fax (585) 647-3311

CHAIN OF CUSTODY

PARADIGM

REPORT TO:		INVOICE TO:			
COMPANY:	Ravi Engineering & Land Surveying, P.C.	COMPANY:	Same	LAB PROJECT #: 245598	CLIENT PROJECT #: 43-24-238
ADDRESS:	2110 South Clinton Avenue, Suite 1	ADDRESS:			
CITY:	Rochester STATE: NY ZIP: 14618	CITY:	STATE: ZIP:	TURNAROUND TIME: (WORKING DAYS)	
PHONE:	(585) 223-3660 FAX: (585) 223-4250	PHONE:	FAX:	STD / OTHER	
PROJECT NAME/SITE NAME:	ATTN: Tony Hill	ATTN:	Tony Hill	1 2 3 X 5	
Binghamton University - Admin Tower	COMMENTS: Email results to ahill@ravieng.com			Quotation #: Ravi Rates	

REQUESTED ANALYSIS

	DATE	TIME	COMPOSITE	GRAB	SAMPLE LOCATION/FIELD ID	MATRIX	NUMBER CONTAINERS	PCBs									REMARKS	PARADIGM LAB SAMPLE NUMBER				
1	11/19/24			X	1P - West Elev.	1	CK	X									window Frame				0	1
2					7P. Lobby door	1	SD	↓									door to met Frame				0	2
3					8P - South Elevation	1	SD	↓									side lite to brick				0	3
4						prev Bag		GP	in 11/26/24													
5																						
6																						
7																						
8																						
9																						
10																						

****LAB USE ONLY BELOW THIS LINE****

Sample Condition: Per NELAC/ELAP 210/241/242/243/244

Receipt Parameter	NELAC Compliance	
Container Type:	Y ☐	N ☐
Comments:		
Preservation:	Y ☐	N ☐
Comments:		
Holding Time:	Y ☐	N ☐
Comments:		
Temperature:	Y ☐	N ☐
Comments:		

Sampled By — Date/Time: 11/19/24

Relinquished By — Date/Time: 11/26/24

Received By — Date/Time: 11/20/24 1520

Received @ Lab By — Date/Time: 11/26/24 15:35

18.3°C 11/26/24 15:32

Total Cost:

P.I.F.

PARADIGM
ENVIRONMENTAL SERVICES

Chain of Custody Supplement

Client: Ravi Engineering **Completed by:** [signature]

Lab Project ID: 245598 **Date:** 11/26/2014

Sample Condition Requirements

Per NELAC/ELAP 210/241/242/243/244

Condition	NELAC compliance with the sample condition requirements upon receipt		
	Yes	No	N/A
Container Type	✓		
Comments			
Transferred to method-compliant container			✓
Headspace (<1 mL)			✓
Comments			
Preservation			✓
Comments			
Chlorine Absent (<0.10 ppm per test strip)			✓
Comments			
Holding Time	✓		
Comments			
Temperature		✓	
Comments	18.8°C		
Compliant Sample Quantity/Type	✓		
Comments			

ATTACHMENT C

Laboratory Certification

LIMITED PCB CAULK SURVEY

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2026
Issued April 01, 2025

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. STEVE DEVITO
PARADIGM ENVIRONMENTAL SERVICES INC
179 LAKE AVENUE
ROCHESTER, NY 14608

NY Lab Id No: 10958

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

Metals I	
Lead, Total	NIOSH 7303
Miscellaneous	
Asbestos	40 CFR 763 APX A No. III
	NIOSH 7402
Fibers	NIOSH 7400 A RULES
Polychlorinated Biphenyls	
PCBs and Aroclors	NIOSH 5503

Serial No.: 70339

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

LIMITED LEAD PAINT SURVEY

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850

Volume 3 of 3

Prepared For:

QPK Design, LLP
450 South Salina Street
Suite 225
Binghamton, NY 13202

Prepared By:

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618

April 2025

Project No. 43-24-238A

LIMITED LEAD PAINT SURVEY

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850

Volume 3 of 3

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ATTACHMENT A ***AREAS OF INSPECTION/BULK SAMPLE LOCATION PLAN***
ATTACHMENT B ***ANALYTICAL REPORT AND CHAIN OF CUSTODY FORMS***
ATTACHMENT C ***LABORATORY CERTIFICATION***

EXECUTIVE SUMMARY

Ravi Engineering & Land Surveying, P.C. (RE&LS) was retained by QPK Design, LLP (QPK) to conduct a Limited Lead Paint Survey at the State University of New York (SUNY) Binghamton Couper Administration Tower, 4400 Vestal Parkway East, Binghamton, New York 13850. The Survey was conducted on November 19, 2024 & February 28, 2025.

LEAD PAINT CHIP SAMPLING

One (1) paint chip sample was collected and submitted to Paradigm Environmental Services, Inc. for lead analysis. According to the Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, any concentration of lead in paint above zero (0) is considered to be lead-containing. Per OSHA Standards, the one (1) paint chip sample was determined to be lead-containing.

1.0 INTRODUCTION

Ravi Engineering & Land Surveying, P.C. (RE&LS) was retained by QPK Design, LLP (QPK) to conduct a Lead Paint Survey at the State University of New York (SUNY) Binghamton Couper Administration Tower, 4400 Vestal Parkway East, Binghamton, New York 13850. The Survey was conducted on November 19, 2024 & February 28, 2025.

2.0 PROJECT OVERVIEW

The Survey was conducted to support the proposed renovation project at the Couper Administration Tower. The scope of work was based on electronic correspondence with QPK in September 2024. The Survey was limited to the proposed areas of renovation within the Couper Administration Tower.

3.0 LEAD PAINT CHIP SAMPLING /FINDINGS

The Limited Lead Paint Survey was conducted using portions of Chapter 7 of the United States Department of Housing and Urban Development (USHUD) *Guidelines for the Control and Evaluation of Lead-Based Paint Hazards in Housing (2012).* This Lead Paint Survey is not intended to be a: "surface-to-surface investigation for lead-based paint" as defined by USHUD. Paint chip sampling procedures were used in accordance with USHUD. The remainder of the Guideline dictates procedures to be used for residential housing constructed before 1978. According to USHUD and the United States Environmental Protection Agency (USEPA), paint is considered to be lead-based if concentrations are 0.5% or greater, by weight.

Applicable lead paint guidelines for the construction industry can be found in 29 CFR 1926.62. The Occupational Safety and Health Administration (OSHA) Lead in Construction Standard does not mandate testing for paint prior to, or post-renovation or demolition activities. The OSHA Standard is intended to protect workers from occupational exposures to lead in construction. For the purpose of the OSHA Standard, any concentration of lead in paint above zero (0) is considered to be lead-containing.

One (1) paint chip sample was collected and submitted to Paradigm Environmental Services, Inc. (Paradigm) for lead analysis. A copy of Paradigm's Certification is included in Attachment C. Bulk sample locations are included in Attachment A. Per OSHA Standards, the one (1) paint chip sample was determined to be lead-containing.

TABLE 1 – LEAD PAINT SAMPLING RESULTS

Sample Number	Location	Substrate	Color	Result by weight (%)
PNT-001	Metal Window Frame	Paint	Gray	0.0200

4.0 LIMITATIONS OF INVESTIGATION

The Survey included the spaces outlined in Section 2.0 Project Overview. Non-destructive sampling techniques were employed during the Survey. Areas that were inaccessible were not sampled nor identified.

5.0 RECOMMENDATIONS

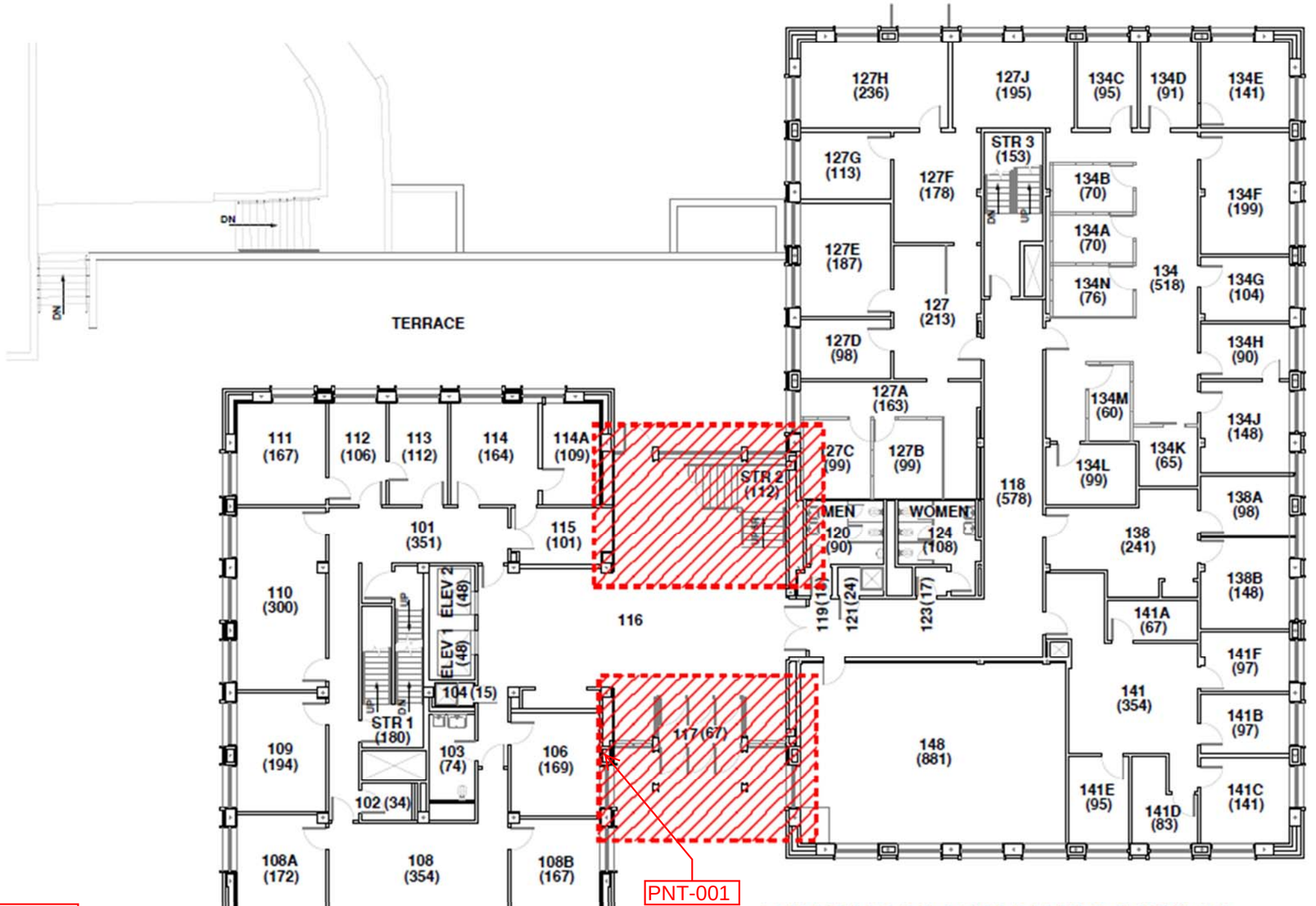
Suspect painted materials, not identified in this Survey report, discovered during renovation or demolition activities shall be assumed to be lead-based until laboratory analysis proves otherwise. Contract work that will disturb lead-containing paint shall be performed in accordance with 29 CFR 1926.62.

ATTACHMENT A

Areas of Inspection/Bulk Sample Location Plan

LIMITED LEAD PAINT SURVEY

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850



LEGEND
SAMPLE LOCATION XX

BINGHAMTON UNIVERSITY
COUPER ADMINISTRATION BLDG. BLDG. NO. 029
FIRST FLOOR PLAN

RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618
TL: (585) 223-3660 FX (585) 697-1764

SUNY BINGHAMTON
COUPER ADMINISTRATION TOWER
LIMITED LEAD PAINT SURVEY

ATTACHMENT A: AREAS OF INSPECTION/BULK SAMPLE LOCATION PLANS

PROJECT NO.	DATE:
43-24-238A	APRIL 2025
SCALE: N.T.S.	DRAWING NO: DWG-01

ATTACHMENT B

Analytical Report and Chain of Custody Forms

LIMITED LEAD PAINT SURVEY

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850

PARADIGM
ENVIRONMENTAL SERVICES, INC

Analytical Report For

Ravi Engineering & Land Surveying, P.C.

For Lab Project ID

245600

Referencing

43-24-238 - Binghamton University - Admin Tower

Prepared

Monday, December 2, 2024

Any noncompliant QC parameters or other notes impacting data interpretation are flagged or documented on the final report or are noted below.

Emily Farmer

Certifies that this report has been approved by the Technical Director or Designee

179 Lake Avenue • Rochester, NY 14608 • (585) 647-2530 • Fax (585) 647-3311 • ELAP ID# 10958

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PARADIGM
ENVIRONMENTAL SERVICES, INC.

Lab Project ID: 245600

Client: **Ravi Engineering & Land Surveying, P.C.**

Project Reference: 43-24-238 - Binghamton University - Admin Tower

Sample Identifier:	PNT-001 Window Frame Gry-Metal		
Lab Sample ID:	245600-01	**Date Sampled:**	11/19/2024
Matrix:	Paint	**Date Received**	11/26/2024

Lead

Analyte	Result	Units	Qualifier	Date Analyzed
Lead	**0.0200**	%		12/2/2024 11:21

Method Reference(s): EPA 6010C
EPA 3050B
Preparation Date: 11/27/2024
Data File: 241202A

Analytical Report Appendix

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All results provided by LAB are strictly for the use of its clients and LAB is in no way responsible for the use of such results by clients or third parties. All reports should be considered in their entirety, and LAB is not responsible for the separation, detachment, or other use of any portion of these reports. Client may not assign the lab report without the written consent of the LAB.
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Disposal of hazardous waste samples is the responsibility of the Client. If the Client does not wish such samples returned, LAB may add storage and disposal fees to the final invoice. Maximum storage time for samples is 30 days after completion of analysis unless modified by applicable state or federal laws. Client will be required to give the LAB written instructions concerning disposal of these samples.
LAB reserves the absolute right, exercisable at any time, to refuse to receive delivery of, refuse to accept, or revoke acceptance of any sample, which, in the sole judgment of LAB (a) is of unsuitable volume, (b) may be or become unsuitable for or may pose a risk in handling, transport, or processing for any health, safety, environmental or other reason whether or not due to the presence in the sample of any hazardous substance, and whether or not such presence has been disclosed to LAB by Client or (c) if the condition or sample date make the sample unsuitable for analysis.

Legal Responsibility. LAB is solely responsible for performance of this contract, and no affiliated company, director, officer, employee, or agent shall have any legal responsibility hereunder, whether in contract or tort including negligence.

Assignment. LAB may assign its performance obligations under this contract to other parties, as it deems necessary. LAB shall disclose to Client any assignee (subcontractor) by ELAP ID # on the submitted final report.

Force Majeure. LAB shall have no responsibility or liability to the Client for any failure or delay in performance by LAB, which results in whole or in part from any cause or circumstance beyond the reasonable control of LAB. Such causes and circumstances shall include, but not limited to, acts of God, acts or orders of any government authority, strikes or other labor disputes, natural disasters, accidents, wars, civil disturbances, difficulties or delays in transportation, mail or delivery services, inability to obtain sufficient services or supplies from LAB's usual suppliers, or any other cause beyond LAB's reasonable control.

Law. This contract shall be continued under the laws of the State of New York without regard to its conflicts of laws provision.

179 Lake Avenue, Rochester, NY 14608 Office (585) 647-2530 Fax (585) 647-3311

1 of 2

CHAIN OF CUSTODY

PARADIGM ENVIRONMENTAL SERVICES, INC.

REPORT TO:		INVOICE TO:			
COMPANY:	Ravi Engineering & Land Surveying, P.C	COMPANY:	Same	LAB PROJECT #: 245600	CLIENT PROJECT #: 43-24-238
ADDRESS:	2110 South Clinton Avenue, Suite 1	ADDRESS:			
CITY:	Rochester STATE: NY ZIP: 14618	CITY:	STATE: ZIP:	TURNAROUND TIME: (WORKING DAYS)	
PHONE:	(585) 223-3660 FAX: (585) 223-4250	PHONE:	FAX:	STD / OTHER	
PROJECT NAME/SITE NAME: Binghamton University - Admin Tower	ATTN: Tony Hill	ATTN:	Tony Hill	☐ 1 ☐ 2 ☐ 3 ☒ 5 ☐	
	COMMENTS: Email results to ahill@ravieng.com			Quotation #: Ravi Rates	

REQUESTED ANALYSIS

	DATE	TIME	COMPOSITE	GRAB	SAMPLE LOCATION/FIELD ID	MATRIX	NUMBER OF CONTAINERS	Lead	REMARKS	PARADIGM LAB SAMPLE NUMBER
1	11/19/24			X	PNT-001	Paint	1	✓	Window Frame	01
2						per visual	Sample ID		GRY - metal	
3						~~GP~~ GP 11/26/24				
4										
5										
6										
7										
8										
9										
10										

LAB USE ONLY BELOW THIS LINE

Sample Condition: Per NELAC/ELAP 210/241/242/243/244

Receipt Parameter	NELAC Compliance	
Container Type:	Y ☐	N ☐
Comments:		
Preservation:	Y ☐	N ☐
Comments:		
Holding Time:	Y ☐	N ☐
Comments:		
Temperature:	Y ☐	N ☐
Comments:		

Sampled By	11/19/24	Date/Time
Relinquished By	11/26/24	Date/Time
Received By	11/26/24 1520	Date/Time
Received @ Lab By	11/26/24 15:45	Date/Time

Total Cost:

P.I.F.

PARADIGM
ENVIRONMENTAL SERVICES

Chain of Custody Supplement

Client: Ravi Engineering **Completed by:** Cedric M

Lab Project ID: 24 5600 **Date:** 11/26/24

Sample Condition Requirements

Per NELAC/ELAP 210/241/242/243/244

Condition	*NELAC compliance with the sample condition requirements upon receipt* Yes	No	N/A
Container Type	X		
Comments			
Transferred to method-compliant container			X
Headspace (<1 mL)			X
Comments			
Preservation			X
Comments			
Chlorine Absent (<0.10 ppm per test strip)			X
Comments			
Holding Time	X		
Comments			
Temperature			X
Comments			
Compliant Sample Quantity/Type	X		
Comments			

ATTACHMENT C

Laboratory Certification

LIMITED LEAD PAINT SURVEY

State University of New York Binghamton University
Couper Administration Tower
4400 Vestal Parkway East
Binghamton, New York 13850

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2026
Issued April 01, 2025

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. STEVE DEVITO
PARADIGM ENVIRONMENTAL SERVICES INC
179 LAKE AVENUE
ROCHESTER, NY 14608

NY Lab Id No: 10958

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

Metals I	
Lead, Total	NIOSH 7303
Miscellaneous	
Asbestos	40 CFR 763 APX A No. III
	NIOSH 7402
Fibers	NIOSH 7400 A RULES
Polychlorinated Biphenyls	
PCBs and Aroclors	NIOSH 5503

Serial No.: 70339

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



A1 SITE ACCESS AND STAGING PLAN
N.T.S

NOTES:
1. THE CONTRACTOR SHALL PROVIDE A TEMPORARY CONSTRUCTION TRAILER LOCATED ENTIRELY WITHIN THE DESIGNATED LAYDOWN AREA FOR THE CONTRACTOR'S USE THROUGHOUT CONSTRUCTION. THE PROPOSED TRAILER LOCATION, SIZE, CONFIGURATION, UTILITY REQUIREMENTS, AND ASSOCIATED SITE LOGISTICS SHALL BE COORDINATED WITH SUCF AND THE CAMPUS AND ARE SUBJECT TO REVIEW AND APPROVAL PRIOR TO INSTALLATION.
2. THE EXISTING BRIDGE AND ASSOCIATED ROOFTOP ARE CLOSED TO ALL CONSTRUCTION VEHICLES AND HEAVY EQUIPMENT. HAND CARTS AND SMALL MOVING EQUIPMENT MAY BE PERMITTED, PENDING A REVIEW OF THEIR ANTICIPATED WEIGHT AND PROPOSED PAYLOADS.

1

NOTE:
1. CHAIN LINK FENCE POSTS, FITTINGS, AND ACCESSORIES, SHALL BE FINISHED BLACK.
2. CHAIN LINK FENCE FABRIC SHALL BE VINYL COATED
3. CONTRACTOR TO PROVIDE CONSTRUCTION FENCING AT CONTRACTOR STAGING AREA AND ALL AREAS OF CONSTRUCTION. CONTRACTOR TO COORDINATE LIMITS OF CONSTRUCTION FENCING WITH CAMPUS PRIOR TO THE START OF CONSTRUCTION.

A5 CONSTRUCTION FENCING
N.T.S

QPK DESIGN
450 SOUTH SALINA STREET
SUITE 500 PO BOX 29
SYRACUSE, NY 13201-0029

LICENSED LANDSCAPE ARCHITECT JOSEPH M. CAVANAUGH 002749 STATE OF NEW YORK

IT IS A VIOLATION OF THE LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ARCHITECT, TO ALTER THIS DOCUMENT IN ANY WAY. IF ANY ALTERATIONS ARE MADE, THE ALTERING ARCHITECT SHALL AFFIX TO THE DOCUMENT HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

SUCF #071099-00 REPLACE STOREFRONT AND EXTERIOR DOORS- BARTLE LIBRARY, UNIVERSITY UNION, AND COUPER ADMINISTRATION BUILDING

AT STATE UNIVERSITY OF NEW YORK AT BINGHAMTON

Binghamton University, 4400 Vestal Pkwy E, Binghamton NY 13902

PROJECT STATUS
BID DOCUMENTS

NORTH

REVISIONS

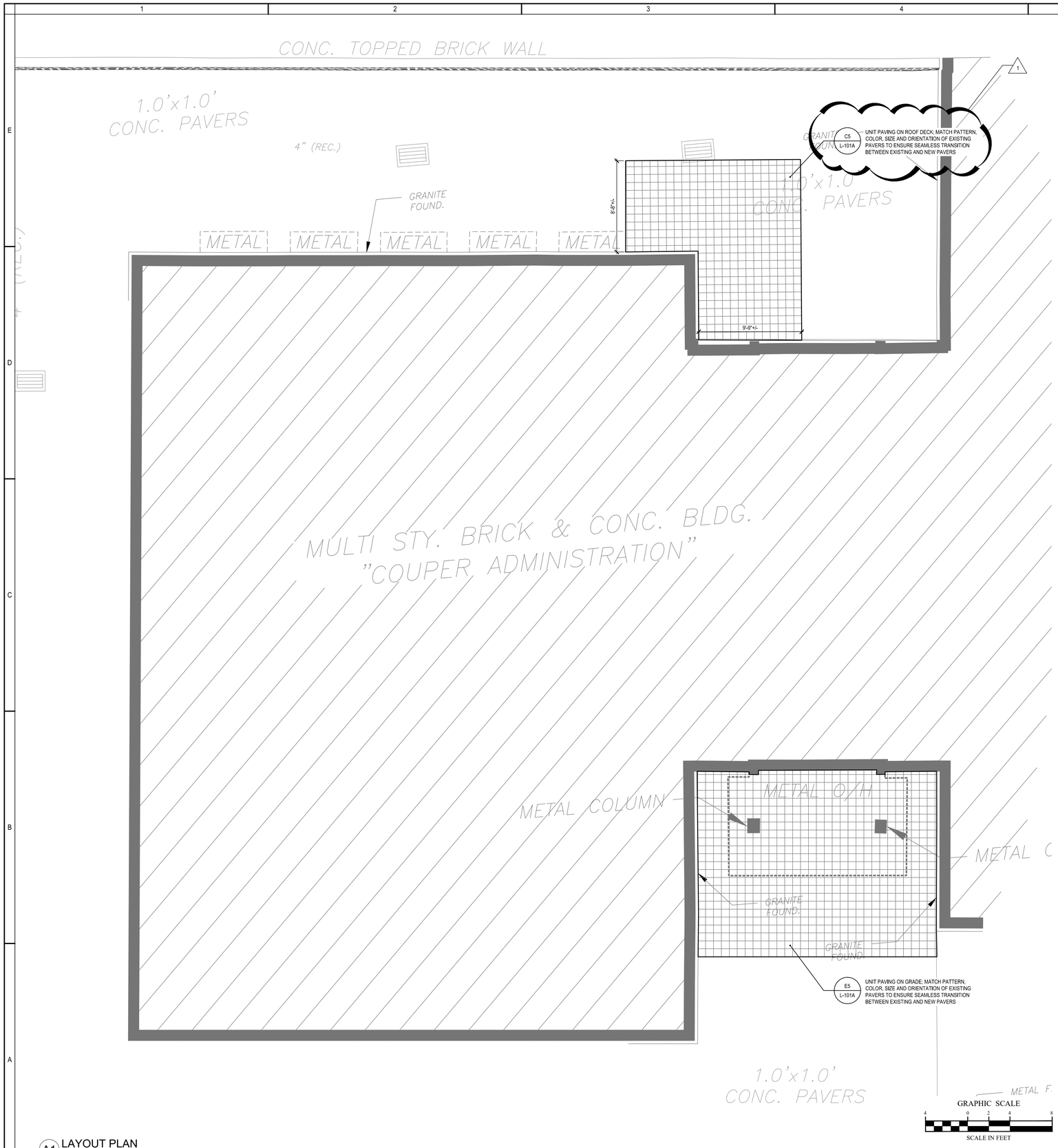
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PROJECT NUM
224090.00

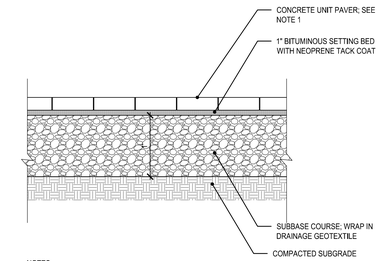
DATE
07/27/2026

SHEET TITLE
SITE ACCESS AND STAGING PLAN

L-002

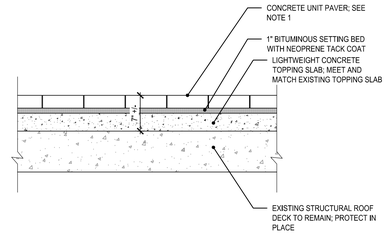


A1 LAYOUT PLAN
1/4" = 1'-0"



NOTES:
1. MATCH PATTERN, COLOR, SIZE AND ORIENTATION OF EXISTING PAVERS TO ENSURE SEAMLESS TRANSITION BETWEEN EXISTING AND NEW PAVERS. CONTRACTOR SHALL SUBMIT SAMPLE OF NEW AND EXISITNG PAVER TO LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL.

E5 UNIT PAVING ON GRADE
N.T.S.



NOTES:
1. MATCH PATTERN, COLOR, SIZE AND ORIENTATION OF EXISTING PAVERS TO ENSURE SEAMLESS TRANSITION BETWEEN EXISTING AND NEW PAVERS. CONTRACTOR SHALL SUBMIT SAMPLE OF NEW AND EXISITNG PAVER TO LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL.

C5 UNIT PAVING ON ROOF DECK
N.T.S.

QPK DESIGN
450 SOUTH SALINA STREET
SUITE 500 PO BOX 29
SYRACUSE, NY 13201-0029

LICENSED LANDSCAPE ARCHITECT JOSEPH M. GAVANELLI 002749 STATE OF NEW YORK

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AT STATE UNIVERSITY OF NEW YORK AT BINGHAMTON

Binghamton University, 4400 Vestal Pkwy E, Binghamton NY 13902

PROJECT STATUS
BID DOCUMENTS

NORTH

REVISIONS

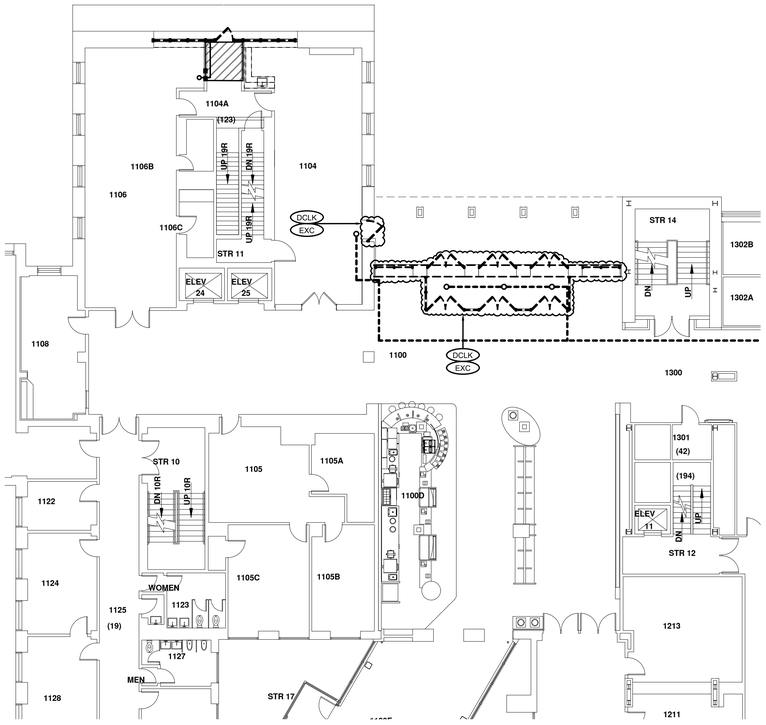
MARK	DATE	DESCRIPTION
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PROJECT NUM
224090.00

DATE
07/27/2026

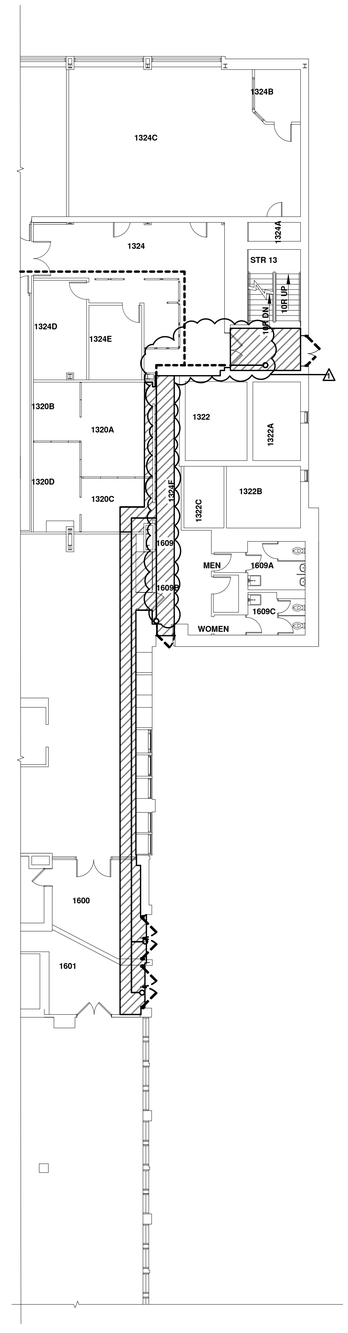
SHEET TITLE
LAYOUT PLAN

L-101A



1 HM-101B HAZARDOUS MATERIALS ABATEMENT PLAN - PARTIAL FIRST FLOOR - BARTLE LIBRARY - NORTH

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



2 HM-101B HAZARDOUS MATERIALS ABATEMENT PLAN - PARTIAL FIRST FLOOR - BARTLE LIBRARY - NORTH

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

GENERAL LEAD-CONTAINING PAINT NOTES APPLICABLE TO HM-101B

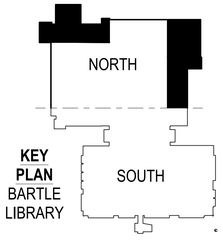
1. SURFACES CONTAINING LEAD-CONTAINING PAINT ARE ASSUMED TO BE PRESENT IN THE RENOVATION AREAS. ALTERATIONS TO PAINTED SURFACES CONTAINING LEAD SHALL BE PERFORMED BY ALL CONTRACTORS IN ACCORDANCE WITH 29 CFR 1926.62.
2. ALL REQUIRED PRE-ABATEMENT SUBMITTALS SHALL BE RECEIVED AND APPROVED BY THE ENVIRONMENTAL CONSULTANT (RAVI ENGINEERING & LAND SURVEYING, P.C.) PRIOR TO STARTING ALTERATIONS.
3. IN THE EVENT THERE IS A CONFLICT BETWEEN THE DRAWINGS AND SPECIFICATIONS, THE MOST STRINGENT REGULATION SHALL APPLY.

ASBESTOS ABATEMENT LEGEND APPLICABLE TO HM-101B

AC	ASBESTOS-CONTAINING
SF	SQUARE FEET
DCLK	AC GRAY PLIABLE DOOR CAULK
EXC	AC GRAY PLIABLE EXPANSION JOINT CAULK
	APPROXIMATE AREA OF AC GRAY PLIABLE DOOR CAULK AND AC GRAY PLIABLE EXPANSION JOINT CAULK
	APPROXIMATE AREA OF VERMICULITE / ACM GRAY SPRAY-ON FIREPROOFING ABOVE 1' X 1' ACOUSTICAL CEILING TILES. CONTRACTOR SHALL BE AWARE OF THE PRESENCE OF ACM AND TAKE CARE TO NOT DISTURB CEILING TILES DURING INSTALLATION ACTIVITIES. ANY DISTURBANCE SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ON-SITE ENVIRONMENTAL CONSULTANT. REF. ASBESTOS GENERAL NOTE 19 ON HM-100.
	PROPOSED CONDUIT INSTALLATION ABOVE ACOUSTICAL CEILING TILES
	PROPOSED CONDUIT INSTALLATION BELOW ACOUSTICAL CEILING TILES

APPROXIMATE ASBESTOS ABATEMENT QUANTITIES APPLICABLE TO HM-101B (FOR BIDDING ONLY)

DCLK	10 SF
EXC	10 SF



KEY PLAN BARTLE LIBRARY

QPK DESIGN
450 SOUTH SALINA STREET
SUITE 500 PO BOX 29
SYRACUSE, NY 13201-0029

STATE OF NEW YORK · DOUGLAS SCOTT WEBBER · 110518 · LICENSED PROFESSIONAL ENGINEER

EXPIRES: 9/30/2027

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RAVI ENGINEERING & LAND SURVEYING, P.C.
2110 S. Clinton Avenue
Rochester, NY 14618
NYS COA#: Engineering: 21704 Survey: 20790
tel: (585) 223-3460 Fax: (585) 697-1344

SUCF #071099-00 REPLACE STOREFRONT AND EXTERIOR DOORS - BARTLE LIBRARY , UNIVERSITY UNION, AND COUPER ADMINISTRATION BUILDING

AT STATE UNIVERSITY OF NEW YORK AT BINGHAMTON

Binghamton University, 4400 Vestal Pkwy E, Binghamton, NY 13902

PROJECT STATUS
BID DOCUMENTS

PROJECT NORTH

REVISIONS

1	08/19/2026	ADDENDUM NO. 2

PROJECT NUM
224090.00

DATE
07/27/2026

SHEET TITLE
HAZARDOUS MATERIALS ABATEMENT PLAN - PARTIAL FIRST FLOOR - BARTLE LIBRARY - NORTH

HM-101B