CONSULTANT: ENCORUS GROUP ENGINEERING
CERTIFICATE OF AUTHORIZATION: # 0020000

11-10-2025

STATE OF NEW YORK
ROBERT ROSS TRAINOR II
090198
LICENSED PROFESSIONAL ENGINEER

REGISTRATION EXPIRES: 07/31/2026

Project Manual

Renovate Labs Furnas 913, 914 Disciplinary Excellence

Project Number: 2025-088

November 12, 2025

PROPOSAL A – GENERAL CONSTRUCTION
PROPOSAL B – PLUMBING AND FIRE PROTECTION
PROPOSAL C – MECHANICAL/HVAC
PROPOSAL D - ELECTRICAL

STATE OF NEW YORK
RAVI RAMAN
No. 066343
LICENSED PROFESSIONAL ENGINEER

REGISTERED ARCHITECT
ANTHONY M. SANTANGELO
036591
STATE OF NEW YORK

RAM-TECH Engineers, P.C.
Expires: 02/28/2027
DOS ID# 1395067
RAB# 23019
Signed on: 11/07/2025

University at Buffalo, North Campus
Furnas Hall, 9th Floor
Atten: Joseph D'Errico

Project Number: ___2025-088_____ Date: 11/12/2025
Project Name:_____Renovate Labs Furnas 913, 914 Disciplinary Excellence
Agency/Div Code: __3320206_____

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State University of New York Construction Agreement

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6. Affirmative Action and Minority & Women Owned Business Enterprises *from SUNY Procedure Item #7557 "Participation by Minority Group Members and Women (MWBEs) with Respect to State University of New York Contract" (applies >$100,000)*
   a. Form 7557-121b – MWBE Prospective Bidders Notice
   b. Form 7557-107 - M/WBE Utilization Plan *(required within seven calendar days of the bid)*
   c. The Contractor's EEO Policy Statement or Form 7557-104 *(required within seven days of the bid)*
   d. Form 7557-108 - M/WBE-EEO Work Plan *(required within seven days of the bid)*

   Note: In accordance Procedure Item #7557 MWBE Utilization Plans, EEO policy statements and EEO Work Plans are due within seven days of submittal of the bid.

7. Service Disabled Owned Business Enterprise *from SUNY Procedure Item #7564 "Participation by Service-Disabled Veteran-Owned Business (SDVOBs) with Respect to State University of New York Contracts" (applies >$100,000)*
   a. Form 7564-121b – SDVOB Prospective Bidders Notice
   b. Form 7564-107 - SDVOB Utilization Plan *(required within seven days of the bid)*

Attachments –Additional Contractor Documentation (required after bid opening from the low bidder)

8. State Finance Law §§139-j and 139-k *from SUNY Procedure Item #7552 "Procurement Lobbying Procedure for State University of New York" (applies >$15,000)*
   a. Form A - Summary: Policy and Procedure of the State University of New York Relating to State Finance Law §§139-j and 139-k
   b. Form B - Affirmation with respect to State Finance Law §§139-j and 139-k
   c. Form C - Disclosure and Certification with respect to State Finance Law §§139-j and 139-k

9. Bidder's Certifications *from SUNY Procedure Item #7554 "Construction Contracting Procedures*
   a. Form 7554-20 Bidder's Certifications

10. Procurement Forms *from SUNY Procedure Item #7553 "Purchasing and Contracting (Procurement)*
    a. Form I Omnibus Procurement Act of 1992 *(applies >$1,000,000)*
    b. Form II Omnibus Procurement Act of 1992, Out of state firms *(applies >$1,000,000)*
    c. Form XIII Public Officers Law Compliance

11. Bonds and Certificate of Insurance *from SUNY Procedure Item #7554 "Construction Contracting Procedures*
    a. Form 7554-11 Labor & Materials and Performance Bonds *(applies >$50,000)*
    b. Form 7554-12 Certificate of Insurance (ACORD Forms 25 and 855) *(applies to all contracts)*
    c. NYS Workers Compensation and Disability Insurance *(applies all contracts)*

12. Vendor Responsibility
    a. OSC's Vendrep - Online System or Link to paper forms *(form applies ≥ $100,000)*

13. NYS Labor Law, Section 220-a
    a. Form 7554-13

i. Form AC 2947, Prime Contractor's Certification
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iii. Form AC 2958, Sub-subcontractor's Certification

14. SUNY at Buffalo Substitute W-9 Form
15. SUNY Pay Application package

16. FOR REFERENCE ONLY: Monthly and Quarterly MWBE, SDVOB and EEO reporting forms

Notice to Bidders and Newspaper Advertisement

The State University of New York at ***Buffalo*** will receive sealed bids for project number ***2025-088*** titled ***Renovate Labs Furnas 913, 914 Disciplinary Excellence*** until ***1:00pm*** local time on **January 19th, *2026.***

All bid packages MUST be submitted via email to:
UB-Compliance@buffalo.edu
Email shall include Project # 2025-088 and **Renovate Labs Furnas 913, 914 Disciplinary Excellence** and "Contractor name" in Subject line.
NO BIDS SHOULD BE HAND DELIVERED OR DELIVERED THROUGH ANY DELIVERY SERVICE OR COMMON CARRIER. ONLY ELECTRONIC BIDS WILL BE ACCEPTED UNTIL FURTHER NOTICE. The University assumes no responsibility for any Proposal that is not delivered into its aforesaid email address by 1:00 PM local time.

All work on this Contract is to be completed by March 30th, 2027, starting on or after the University's Notice to Proceed is received which shall be forwarded to the Contractor(s) upon approval of the contract of the New York State Comptroller.

Bidding and Contract Documents may be examined free of charge at the campus and at the following locations.

- Facilities Design & Construction /University at Buffalo, 119 John Beane Center, Buffalo, New York 14260
  (by appointment only – please call 716-645-2612)
- Construction Exchange of Buffalo & WNY, Inc., 2660 William Street, Cheektowaga, New York 14227

Complete sets of Contract Documents for bidding will be available on or about ***December 10th, 2025.*** The Contract documents may be viewed and ordered through the following website: www.avalonplanroom.com in the Public Bid section. If you do not have internet access or have questions on ordering from this site, please contact Avalon Document Services at (716)995-7777. Drawings can be picked up at Avalon Document Services located at 40 La Riviere Drive, Buffalo, New York 14202 after that move date. Payment can be submitted by credit card or by a check made payable to: Avalon Document Services

A walk-through site inspection will be held on __1/07/26_at __10:00am_. All interested parties should assemble at _208 Davis Hall Conference Room_ for a brief presentation prior to heading over to Furnas 9th floor. Failure to participate in the walk-through inspection will not be grounds for extra compensation due to field conditions encountered on this project. **All Request for Information (RFI's) must be sent by January 9*th*, *2026.***

Security will be required to each bid in an amount not less than five (5) percent of the Total Bid.

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

The State University of New York reserves the right to reject any or all bids.

INFORMATION FOR BIDDERS

Section 1 Definitions

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

Section 2 Issuance of Bidding and Contract Documents

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

Section 3 Proposals

(1) All bid packages MUST be submitted via email to UB-Compliance@buffalo.edu Email shall include Project # 2025-088 and Renovate Labs Furnas 913, 914 Disciplinary Excellence and "Contractor name" in Subject line.NO BIDS SHOULD BE HAND DELIVERED OR DELIVERED THROUGH ANY DELIVERY SERVICE OR COMMON CARRIER. ONLY ELECTRONIC BIDS WILL BE ACCEPTED UNTIL FURTHER NOTICE. The University assumes no responsibility for any Proposal that is not delivered into its aforesaid email address by **1:00 PM local time on January 19, 2025**.

(2) All blank spaces in the Proposal must be filled in and, except as otherwise expressly provided in the Bidding Documents; no change is to be made in the phraseology of the Proposal or in the items mentioned therein.

(3) Proposals that are illegible or that contains omissions, alterations, additions or items not called for in the Bidding Documents may be rejected as informal. In the event any bidder modifies, limits or restricts all or any part of its Proposal in a manner other than that expressly provided for in the Bidding Documents, its Proposal may be rejected as informal.

(4) Any Proposal may be considered informal which does not contain prices in words and figures in all of the spaces provided or which is not accompanied by a bid security in proper form. In case any price shown in words and its equivalent shown in figures do not agree, the written words shall be binding upon the bidder. In case of a discrepancy in the prices contained in the Proposal forms submitted in duplicate by the bidder, the Proposal form which contains the lower bid shall be deemed the bid of the bidder; provided, however, the University 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 University at the location designated in and prior to the time of opening of bids designated in the Bidding and Contract Documents or prior to the time of opening as extended by Addendum.

(7) Bids may be modified, withdrawn or canceled only in writing or by email notice received by the University prior to the time of opening of bids designated in the Bidding and Contract Documents. A written or email notice of modification, withdrawal or cancellation shall be marked by the bidder with the name and address of the bidder, the title of the Project and the Project number. Upon

receipt by the University a duly authorized employee of the University, who shall note thereon the date and time of receipt and shall thereupon attach said written or email notice of modification, withdrawal or cancellation to the envelope submitted by the bidder pursuant to subdivision (1) of this document.

(8) Permission will not be given to modify, explain, withdraw or cancel any Proposal or part thereof after the time designated in the Bidding and Contract Documents for the opening of bids, unless such modification, explanation, withdrawal or cancellation is permitted by law and the University is of the opinion that it is in the public interest to permit the same.

Section 4 Examination of Bidding and Contract Documents

(1) Prospective bidders shall examine the Bidding and Contract Documents carefully and, before bidding, shall make written request to the Consultant (with a copy thereof to the University) for an interpretation or correction of any ambiguity, inconsistency or error therein which should be discovered by a reasonably prudent bidder. Such interpretation or correction as well as any additional Contract provision the University shall decide to include will be issued in writing by the Consultant as an Addendum, which will be sent to each person recorded as having received a copy of the Bidding and Contract Documents from the Consultant, and which also will be available at the places where the Bidding and Contract Documents are available for inspection by prospective bidders. Upon such emailing or delivery and making available for inspection, such Addendum will become a part of the Bidding and Contract Documents and will be binding on all bidders whether or not the bidder receives or acknowledges the actual notice of it. Prospective bidders are responsible for ensuring that all addenda have been incorporated into the bid. The requirements contained in all Bidding and Contract Documents shall apply to all Addenda.

(2) Only the written interpretation or correction so given by Addendum shall be binding. Prospective bidders are warned that no trustee, officer, agent or employee of the University or the Consultant is authorized to explain or interpret the Bidding and Contract Documents by any other method, and any such explanation or interpretation, if given, must not be relied upon.

Section 5 Computation of Bid

(1) In computing their bids, bidders are not to include the sales and compensating use taxes of the State of New York or of any city and county in the State of New York for any supplies or materials which are incorporated into the completed Project as the University is exempt from such taxes.

(2) Unit prices may be inserted in the Proposal by the University or the bidder at the discretion of the University. Any unit prices listed in the Proposal by the University are based upon the Consultant's appraisal of a fair cost for the work involved. Such listed prices will be binding upon both the bidder and the University unless the bidder wishes to change any of such unit prices by crossing out the listed unit price and inserting a revised unit price. Such revised unit price shall not be binding upon the University unless it accepts the same, in writing, before it issues a Notice of Award. In the event the Proposal contains blank spaces for unit prices or the bidder revises any stated unit price, the amount of such unit prices for additions shall not vary by more than 15 percent from the prices inserted by the bidder for deductions, and, if the variance of such prices exceeds 15 percent, the University may adjust the deduction price inserted by the bidder so that it is only 15 percent lower than the addition price inserted by the bidder. In addition, the University may adjust any unit price filled in by a bidder to an amount agreeable to both the bidder and the University or it may reject any unit prices.

(3) Alternates, if any, listed in the Proposal shall be accepted in the order indicated and will be used in combination with the Base Bid to determine the low bidder. Unit prices will not be used to determine the low bidder.

(4) If a tie bid should occur the University reserves the right to use one of the following methods to determine the successful bidder. For tie bids between two contractors the University representative shall flip a coin, both affected contractors must be present for the coin toss. For tie bids between three or more contractors the University representative shall pull names from a bowl, hat or other container. The affected contractors must be present for the drawing.

Section 6 Payment of Bid Security

(1) Each Proposal must be accompanied by the required amount of the bid security, which is 5% of the Total Bid, in the form of a bank draft or certified check, payable at sight to the University and drawn on a bank authorized to do business in the United States, or by a Bid Bond, on a form approved by the University, duly executed by the bidder as principal and having as surety thereon a surety company or companies, approved by the University, 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 attorney.

(2) The University will return, without interest, bid securities 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 as a replacement for a previously provided bank draft or certified check, within two (2) working days after the University'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 University by the successful bidder of the executed Agreement and required Bonds, or within two (2) working days of the University's rejection of all bids or within two (2) working days after the expiration of forty-five (45) calendar days after the bid opening, whichever event shall occur first.

d. Bid Bonds, due to their nature, will not be returned.

(3) The University reserves the right to deposit bid security drafts or checks pending final disposal of them.

Section 7 Qualifications of Bidders

(1) A bidder must demonstrate, to the satisfaction of the University, that it has successfully completed three (3) contracts similar in size, scope and complexity to this contract within the last five (5) years.

a. For scope and complexity, similar work is defined as: Renovation of an existing laboratory space located around other occupied higher education offices, including demolition, asbestos abatement, general construction, plumbing, fire protection, mechanical, electrical work, as further described in the General Requirements, Description of Work.

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

c. The above three projects shall be submitted on Attachment A of the Proposal (Form 7554-07), "List of Completed Similar Construction Projects" (the List). If the List is not provided or is missing information, and/or is found to have erroneous information or information that is no longer current, a Proposal may be rejected as not responsive. If requested by the University, 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 University's request.

(2) All prospective bidders must demonstrate to the satisfaction of the University 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 University 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 Base Bid plus 10 percent of the next $900,000 plus 5 percent of the remainder of its Base Bid. Working capital is defined as the excess of current assets over current liabilities. The University 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 University may make such investigation as the University deems necessary to determine the ability of any bidder to perform the Work. Bidders shall furnish to the University all information and data required by the University, including complete financial data, within the time and in the form and manner required by the University. The University reserves the right to reject any bid if the evidence submitted by or an investigation of such bidder fails to satisfy the University that such bidder is properly qualified to carry out its obligations of the contract and to complete the work contemplated therein. Conditional bids will not be accepted.

(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 University or otherwise provided in the Bidding and Contract Documents, shall submit to both the University and the Consultant:

a. Evidence of a completed New York State Uniform Contracting Questionnaire (Vendor Responsibility Questionnaire For-Profit Construction (CCA-2)). Either email confirmation that the bidder's CCA-2 is current and certified in the New York State VendRep System (VendRep) within the last six months from the bid date, or deliver a certified paper format

CCA-2, including all attachments, to the University.

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

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

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

b. A working plan and schedule showing clearly, in sequence and time-scale, all significant activities of the work. The working plan and schedule shall be in the form of suitable charts, diagrams or bar graphs and shall be based on the Contractor's logic and time estimates for the anticipated time of commencement and completion of the work and its significant phases and activities and the interrelationship between such significant activities and other items pertinent to the work. This requirement is in addition to and not a substitute for the schedule requirements of section 3.02 (Time Progress Schedule) of the Agreement. Although the working plan and schedule submitted shall not be used in determining the lowest responsible bidder, failure to submit the working plan and schedule may result in the rejection of the Proposal as not responsive.

c. The names and addresses of the bidder's proposed subcontractor for the Asbestos Abatement work of any value, and proposed subcontractors for Electrical Work, the Heating, Ventilating and Air-Conditioning Work and the Plumbing Work for each of said work categories valued at $100,000 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 University, 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 University'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 University.

   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 University that it has successfully completed or substantially completed three (3) contracts similar in size, scope and complexity for the designated work within the last five (5) years. The determination of relevant contract experience in terms of size, scope and complexity will be at the sole discretion of the University.

   iv. The bidder will be required to establish, to the satisfaction of the Consultant and the

University, 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 University.

v. For each of the proposed subcontractors, the bidders must submit to the University, within 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 University.

vi. In the event that the University and the Consultant reject any of said proposed subcontractors, the bidder, within two (2) working days after receipt of notification of such rejection, shall again submit to the University 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 University and the Consultant the reliability and responsibility of said proposed subcontractor; When naming another proposed subcontractor, the bidder must promptly submit the proposed subcontractor's completed "List of Completed Similar Construction Projects" and their completed CCA-2.

vii. The bidder will not be permitted to submit another proposed subcontractor if it designated itself for any of the aforesaid categories of work.

viii. Proposed subcontractors of the bidder, approved by the University 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 University.

d. A breakdown of the amount of the bidder's Proposal. Such breakdown shall be prepared in accordance with industry standards. 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) Except for Contracts of $100,000 or less, within seven (7) calendar days after the opening of bids, unless otherwise directed by the University, the three low bidders shall submit to the University for its approval, a Minority and Women-owned Business Enterprise Utilization Plan (Form 7557-107).

(3) 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 University for its approval, an Equal Employment Opportunity Statement and EEO Staffing Plan (Form 7557-108) to ensure equal employment opportunities without discrimination because of race, creed, color, sex or national origin. Such Statement and plan should demonstrate the bidder's intent to comply with the provisions of Article

VI of the Agreement. The EEO plan should include the methods that the bidder will use to address nondiscrimination and affirmative action so that minorities and women will be included in the work force. The Equal Employment Opportunity ("EEO") Policy Statement that shall contain, but not necessarily be limited to, a provision that the bidder, as a precondition to entering into a valid and binding Contract with the University, shall during the performance of the Contract, agree to the following:

a. It 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 programs of affirmative action to ensure that minority group membership 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 on the Contract.

b. It 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 University, it shall request each employment agency, labor union or authorized representative of workers, with which it has 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 bidder's obligations herein.

d. After the award of the contract, it shall submit to the University a work force utilization report, in a form and manner required by the University, of the work force actually utilized on the Contract, broken down by specified ethnic background, gender and Federal occupational categories or other appropriate categories specified by the University.

(4) The above information and such other information as the University or the Consultant may request or obtain will be used by the University in determining the reliability and responsibility of the bidder and any proposed subcontractors. Each bidder must comply promptly with all requests by the University and the Consultant for information and must actively cooperate with the University 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 University under this Section shall be sent to the State University at {insert address or email address}.

Section 9 Award of Contract

(1) The award of the Contract shall be made to the bidder submitting the lowest bid that is responsive to the solicitation and who, in the sole opinion of the University, is qualified to perform the work. The University shall determine the lowest bid by adding to or deducting from the Base Bid of the bidders the additive or deductive alternates, if any, the University elects to accept after the opening of the Proposals. Alternates will be accepted in the order they are set forth in the Proposal. The unit prices set forth in the Proposal for additions to or deductions from the work shall not be considered in determining the lowest bid.

The lowest base bid shall not exceed the amount of funds then estimated by the University as

available to finance the contract. If the lowest bidder exceeds such amount, the University may reject all bids, or may award the contract on the base bid combined with deductive alternates applied in the order they are set forth in the Proposal as produces the net amount which is within the available funds.

(2) The right is reserved, if, in the University's judgment, the public interest will be promoted thereby, to reject any or all Proposals, to waive any informality in any Proposal received or to afford any bidder an opportunity to remedy any deficiency resulting from a minor informality or irregularity. Without limiting the generality of the foregoing:

a. A Proposal may be rejected as not responsive if the bidder fails to furnish the required bid security or to submit the data required with or after its Proposal and this Information for Bidders.

b. A Proposal may be rejected as not responsive if the bidder cannot show to the satisfaction of the University: (i) that it has the necessary qualifications and capital; or (ii) that it owns, controls or can procure the necessary plant and equipment to commence the work at the time prescribed in the Contract and thereafter to prosecute and complete the work at the rate, or within the time specified; or (iii) that it is not already obligated by the performance of so much other work as is likely to delay the commencement, prosecution or completion of the work contemplated by the Contract.

c. A Proposal will be rejected as not responsive if it does not provide for the completion of the work by the date of completion specified in the Proposal.

(3) The University also expressly reserves the right to reject any Proposal as not responsive if, in its opinion, considering the work to be performed, the facts, as to the bidder's business or technical organization, plant, financial and other sources of business experience compared with the work bid upon, justify rejection.

(4) The award of the Contract shall not be construed as a guarantee by the University that the plant, equipment and the general scheme of operations and other data submitted by the bidder with or after its Proposal is either adequate or suitable for the satisfactory performance of the work.

Section 10 Required Bonds and Insurance

(1) Unless otherwise agreed to by the University, within ten (10) working days after the receipt of Letter of Intent, the Contractor shall procure, execute and deliver to the University 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 University and in an amount not less than 100 percent of the total amount of the Contract awarded to the Contractor by the University said bonds must be issued by a surety company approved by the University and authorized to do business in the State of New York as a surety.

b. 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.

(2) Prior to the commencement of work the Successful Bidder will provide, at its sole cost and expense, Certificates of Insurance in accordance with Section 5.06 and 5.07 of the Construction Agreement,

which shall remain in force throughout the term of the agreement, or any extension thereof.

(3) Insurance shall be in accordance with the limits set forth in Schedule A of the Construction Agreement.

(5) A 120-day schedule

a. After receipt of the Letter of Intent but before receipt of the Contract is Awarded, the Contractor, unless otherwise directed by the University, 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 University 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 Contract Award, but before processing second progress payment application, the Contractor, unless otherwise directed by the University, shall submit to the University 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. Said proposed working plan and schedule shall be prepared in accordance with the form and requirements set forth in the preceding paragraph.

Section 11 Minority and Women-Owned Business Enterprises

(1) Pursuant to New York State Executive Law Article 15-A, the University recognizes its obligation under the law to promote opportunities for maximum feasible participation of certified Minority and Women-Owned Business Enterprises and the employment of minority group members and women in the performance of University contracts.

(2) For purposes of this solicitation, the University hereby establishes an overall goal of **30%** for MWBE participation, **15%** for Minority-Owned Business Enterprises ("MBE") participation and **15%** for Women-Owned Business Enterprises ("WBE") participation (based on the current availability of qualified MBEs and WBEs). For additional information please refer to the MWBE requirements outlined in the Prospective Bidders Notice (Form 7557-121b) and Exhibit A-1.

(3) For guidance on how the University will determine a Contractor's "good faith efforts," refer to 5 NYCRR §142.8.

(4) Please note the forms identified in the Prospective Bidders Notice (Form 7557-121b) must be submitted within seven days of the bid opening. Required forms include the MWBE-EEO Policy Statement (Form 7557-104 or equivalent), the MWBE Utilization Plan (Form 7557-107) and the EEO Staffing Plan (Form 7557-108).

(5) Upon contract award and prior to contract execution the selected awardee will enter its Statewide Utilization Management Plan (SUMP) and document its good faith efforts to achieve the applicable MWBE participation goals by submitting evidence through the New York State Contract System, which can be viewed at: http://ny.newnycontracts.com, provided however, that the selected awardee may arrange to provide such evidence via a non-electronic method by contacting the SUNY Office of Diversity, Equity, and Inclusion.

(6) Any modifications or changes to the MWBE Utilization Plan after the Contract award and during the term of the Contract must be reported on a revised MWBE Utilization Plan and submitted to the University. The University will review the submitted MWBE Utilization Plan and advise the Bidder of the University's acceptance or issue a notice of deficiency within 30 days of receipt.

(7) If a notice of deficiency is issued, Awardee agrees that it shall respond to the notice of deficiency within seven (7) business days of receipt by submitting to SUNY [address phone and fax information], a written remedy in response to the notice of deficiency. If the written remedy that is submitted is not timely or is found by SUNY to be inadequate, SUNY shall notify the Awardee and direct the Awardee to submit, within five (5) business days, a request for a partial or total waiver of MWBE participation goals on Form 7557-114. Failure to file the waiver form in a timely manner may be grounds for disqualification of the bid or proposal.

SUNY may disqualify a Bidder as being non-responsive under the following circumstances:

i. If a Bidder fails to submit a MWBE Utilization Plan;
ii. If a Bidder fails to submit a written remedy to a notice of deficiency;
iii. If a Bidder fails to submit a request for waiver; or
iv. If SUNY determines that the Bidder has failed to document good faith efforts.

Section 12 Equal Employment Opportunity Requirements

(1) 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 Bidder will not discriminate against any employee or applicant for employment because of race, creed, color, sex, religion, national origin, military status, sexual orientation, gender identity or expression, age, disability, predisposing genetic characteristics, domestic violence victim status, familial status or marital status. The Bidder 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. The Bidder will state in all solicitations or advertisements for employees that, in the performance of this Contract, all qualified applicants will be afforded equal employment opportunities without discrimination.

(2) The Bidder will undertake, or continue existing programs of affirmative action to ensure that minority group members and women are afforded equal employment opportunities without discrimination, and, if awarded a Contract pursuant to this solicitation, will make and document its conscientious and active efforts to employ and utilize minority group members and women in its work force during its legal engagement with SUNY.

(3) By submission of a bid or proposal in response to this solicitation, the Bidder agrees with all of the terms and conditions of SUNY Exhibit A including Clause 12 - Equal Employment Opportunities for Minorities and Women and acknowledges that, if the Bidder is awarded a Contract, The Contractor is required to ensure that it and any subcontractors awarded a subcontract over $25,000 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, shall 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.

(4) The Bidder further agrees, where applicable, to submit with the bid a staffing plan (Form 7557-108) identifying the anticipated work force to be utilized on the Contract and, if awarded a Contract, will, upon request, submit to SUNY a workforce utilization report identifying the workforce actually utilized on the Contract if known. Forms are available in SUNY Procurement Policies and Procedures Document 7557 online at: http://www.suny.edu/sunypp/documents.cfm?doc_id=611.

Please Note: Failure to comply with the foregoing requirements may result in a finding of non-responsiveness, non-responsibility and/or a breach of the Contract, leading to the withholding of funds, suspension or termination of the Contract or such other actions or enforcement proceedings as allowed by the Contract.

Section 13 Executive Order 162 (EO162)

(1) Governor Cuomo's Executive Order 162 requires state contractors to disclose data on the gender, race, ethnicity, job title, and salary of employees performing work on state contracts.

(2) Bidder agrees to submit Workforce Utilization Report (Form 7557-110) and to require the same information to be submitted by any of their subcontractors on the state contract, in such format as shall be required by SUNY on a monthly basis for all construction contracts and quarterly basis for all other contracts during the term of the contract. Empire State Development has provided specific details on this requirement at https://esd.ny.gov/doing-business-ny/mwbe/mwbe-executive-order-162.

Section 14 Executive Order 177 (EO177)

(1) 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, sexual orientation, gender identity, disability, marital status, military status, or other protected status.

(2) 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.

(3) Generally, the Human Rights Law applies to: (i) all employers of four or more people, employment agencies, labor organizations and apprenticeship training programs in all instances of discrimination or harassment; (ii) employers with fewer than four employees in all cases involving sexual harassment; and (iii) any employer of domestic workers in cases involving sexual harassment or harassment based on gender, race, religion or national origin.

(4) In accordance with Executive Order No. 177, prior to contract award, selected Awardee must

submit a certification that it does not have institutional policies or practices that fail to address harassment and discrimination as described above. SUNY is electing to obtain the certification with the bid documents to avoid unnecessary delay in the contract award process. All Bidders must sign and submit the certification attached to this IFB, SUNY Form 7554-20.

Section 15 Service Disabled Veteran Owned Business Enterprises

(1) Consistent with the State University of New York's commitment to, and in accordance with, Article 17-B of the New York State Executive Law, contractors are required to ensure that good faith efforts are made to include meaningful participation by Service Disabled Veteran-Owned Business in SUNY's MWBE Program. The requirements apply to contracts in excess of $100,000.

(2) To ensure that SDVOB Enterprises are afforded the opportunity for meaningful participation in the performance of the University's contracts, and to assist in achieving the SDVOB Act's statewide goal for participation on state contracts the University hereby establishes an overall goal of 6% for SDVOB participation for this solicitation.

(3) For additional information please refer to the SDVOB requirements outlined in the Prospective Bidders Notice (Form 7564-121b). Please note the SDVOB Utilization Plan (Form 7564-107) must be submitted within seven days of the bid opening.

Section 16 Encouraging Use of New York State Business Businesses in Contract Performance

(1) 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.

(2) 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.

(3) 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.

(4) 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.

(5) 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 17 Multiple Contract Responsibility

This Project is bid in accordance with Wicks Law therefore there are multiple contracts awarded by trade: General, Electrical, Mechanical/HVAC and Plumbing/Fire Protection. Each contractor is responsible for all work associated with this Project for the trade awarded and per the specifications and drawings included in the bid documents.

Section 18 Examination of Site and Conditions of Work

(1) A pre-bid conference and project walk-through will be held with all contractors assembled at Davis Hall 208 Conference Room on 1/07/26 at 10:00am EST. No individual or additional walk-throughs will be provided. Failure to attend a walk-through shall not be the cause for extra payment.

(2) Each bidder must inform itself fully of the conditions relating to the construction of the project and the employment of labor on the project. Failure to do so will not relieve a successful bidder of their obligation to furnish all material and labor necessary to carry out the provisions of their contract. To the extent possible, the contractor, in carrying out the work, must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor.

Section 19 General Terms and Conditions

(1) The following items will be incorporated into, and made part of, the formal agreement: (1)the University's Invitation for Bid; (2) the Successful Bidder's proposal; (3) Exhibit A, Standard Contract Clauses; (4) Exhibit A-1, Affirmative Action Clauses; and, (5) Forms A and B Procurement Lobbying Forms.

(2) In the event of any inconsistency in or conflict among the document elements of the agreement described above, such inconsistency or conflict shall be resolved by giving precedence to the document elements in the following order: (1) Exhibits A and A-1; (2) Forms A and B Procurement Lobbying Forms, (3) the Agreement; (4) this IFB; and (5) the Successful Bidder's proposal.

Section 19.1 Vendor Debriefing and Contract Award Protest Procedure

(1) Upon being notified of their unsuccessful bids, unsuccessful bidders may request in writing a debriefing within 15 calendar days of such notice. The 15 day period starts once unsuccessful bidders are notified. Once a request is made by the bidder, the University must schedule a debriefing within a reasonable time of such request. Unless the campus and bidder mutually agree to use another method such as by telephone, video conference or another type of electronic communication the debriefing must be conducted in person with the bidder.

(2) This procurement is subject to SUNY Procedure Item 7561, Contract Award Protest Procedure.

Section 19.2 Proposal Confidentiality

(1) All proposals and qualifications submitted for the University's consideration will be held in confidence. However, the resulting contract is subject to the New York State Freedom of Information Law (FOIL). Therefore, if an Bidder believes that any information in its proposal constitutes a trade secret or should otherwise be treated as confidential and wishes such

information not to be disclosed the Bidder shall submit with its proposal a separate letter to the designated contact. The letter shall specifically identify the page number(s), line(s) or other appropriate designation(s) containing such information, explaining in detail why such information is a trade secret and formally requesting that such information be kept confidential. Failure by an Bidder to submit such a letter will constitute a waiver by the Bidder of any rights it may have under Section 89(5) of the Public Officers' Law relating to protection of trade secrets.

(2) The proprietary nature of the information designated confidential by the Bidder may be subject to disclosure if ordered by a court of competent jurisdiction. A request that an entire proposal be kept confidential is not advisable since a proposal cannot reasonably consist of all data subject to FOIL proprietary status.

Section 19.3 Information Security Breach and Notification Act

(1) The Bidder shall comply with the provisions of the New York State Information Security Breach and Notification Act (General Business Law Section 899-aa and State Technology Law, Section 208). The Bidder shall be liable for the costs associated with such breach if caused by its negligent or willful acts or omissions, or the negligent or willful acts or omissions of its agents, officers, employees or subcontractors.

Section 19.4 State Finance Law §§ 139-j and 139-k

(1) State Finance Law §§139-j and 139-k imposes certain restrictions on communications between the University and a Bidder during the procurement process. During the restricted period the Bidder is restricted from making contacts to other than designated contact unless it is a contact that is included among certain statutory exceptions set forth in State Finance Law §139-j(3)(a). The restricted period is from the earliest notice of intent to solicit offers through final award and approval of the Contract.

(2) University employees and their designated representatives 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 Bidder is debarred from obtaining government procurement contracts.

Section 19.5 State Finance Law §§ 139-l

(1) Pursuant to N.Y. State Finance Law §139-l, every bid made on or after January 1, 2019 to the State of any public department or agency thereof, where competitive bidding is required by statute, rule or regulation, for work or services performed or to be performed or goods sold or to be sold, and where otherwise required by such public department or agency, shall contain a certification 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 N.Y. State Labor Law §201-g.

(2) N.Y. State Labor Law §201-g provides requirements for such policy and training and directs the Department of Labor, in consultation with the Division of Human Rights, to create and publish a model sexual harassment prevention guidance document, sexual harassment prevent policy and sexual harassment training program that employers may utilize to meet the requirements of N.Y. State Labor Law §201-g. The model sexual harassment prevention policy, model sexual

harassment training materials, and further guidance for employers, can be found online at the following URL: https://www.ny.gov/combating-sexual-harassment-workplace/employers.

(3) Pursuant to N.Y. State Finance Law §139-l, any bid by a corporate bidder containing the certification required above shall be deemed to have been authorized by the board of directors of such bidder, and such authorization shall be deemed to include the signing and submission of such bid and the inclusion therein of such statement as the act and deed of the bidder.

(4) If the bidder cannot make the required certification, such bidder shall so state and shall furnish with the bid a signed statement that sets forth in detail the reasons that the bidder cannot make the certification. After review and consideration of such statement, SUNY may reject the bid or may decide that there are sufficient reasons to accept the bid without such certification.

(5) All Bidders must sign and submit the certification attached to this IFB, SUNY Form 7554-20.

Section 20 Additional Terms and Conditions

(1) The terms and conditions of the State University of New York Construction Agreement (Form 7554-09) shall apply and is provided as an attachment to this IFB.

(2) The resulting agreement shall be binding upon its execution by both parties and, if required by New York State law, upon the approval of the Attorney General and the Office of the State Comptroller.

(3) The agreement may be revised at any time upon mutual consent of the parties in writing. Such written consent will not be effective until signed by both parties and, if required by New York State law, approved by the Attorney General and the Office of the State Comptroller.

(4) The relationship of the Successful Bidder to the University shall be that of independent contractor.

(5) Compliance with the post-employment restrictions of the Ethics in Government Act is required.

(6) The submission of a proposal constitutes a binding offer to perform and provide said services.

(7) In the event the Successful Bidder uses partners, subcontracts or subcontractors, the Successful Bidder will remain responsible for compliance with all specifications and performance of all obligations under the contract resulting from this IFB. For the resulting agreement, the Successful Bidder will be the prime contractor.

(8) The University will not be liable for any costs associated with the preparation, transmittal, or presentation of any proposals or materials submitted in response to this IFB.

(9) Public announcements or news releases regarding this IFB or any subsequent award of a contract must not be made by any Bidder without the prior written approval of SUNY.

(10) The Successful Bidder is responsible for compliance with all applicable rules and regulations pertaining to cities, towns, counties and State where the services are provided, and all other laws applicable to the performance of the resulting contract. The Successful Offeror shall provide all necessary safeguards for safety and protection as set forth by the United States Department of Labor, Occupational Safety and Health Administration.

(11) The Successful Bidder will be responsible for the work, direction and compensation of its employees, consultants, agents and contractors. Nothing in the resulting agreement or the performance thereof by the Successful Bidder will impose any liability or duty whatsoever on the University including, but not limited to, any liability for taxes, compensation, commissions, Workers' Compensation, disability benefits, Social Security, or other employee benefits for any person or entity.

(12) In the event the Successful Bidder is required to be reimbursed for travel, Bidder shall be reimbursed at rates not to exceed the current NYS Schedule of Allowable Reimbursable Travel Expenses. Refer to the U.S. Government Administration Rates for Travel at: http://www.gsa.gov

(13) In addition, the University reserves the right to:

a. Not accept any and all proposals received in response to this IFB, waive requirements or amend this IFB upon notification to all bidders, waive minor irregularities or adjust or correct cost or cost figures with the concurrence of the bidder if mathematical or typographical errors exist.

b. To terminate any resulting contract for: (1) unavailability of funds; (2) cause; (3) convenience; (4) in the event it is found that the certification filed by the Bidder in accordance with State Finance Law §§139-j and 139-k are found to be intentionally false or intentionally incomplete; and if applicable, the Department of Taxation and Finance Contractor Certification Form ST-220CA was false or incomplete. Upon such finding the University may exercise its termination right by providing written notification to the Bidder in accordance with the written notification terms of the contract.

c. Request certified audited financial statements for the past three (3) completed fiscal years and/or other appropriate supplementation including, but not limited to, interim financial statements and credit reports.

d. Contact any or all references.

e. Request clarifications from Bidders for purposes of assuring a full understanding of responsiveness, and further to permit revisions from all Bidders determined to be susceptible to being selected for contract award, prior to award.

e. Advise Bidder of any objectionable employee(s) and/or subcontractor(s) and request their removal from the project. Such removal shall not be reasonably withheld by the Bidder.

Section 21 Requirements for Construction Activities To Address Public Health or Safety

(1) The Bidder agrees it is responsible for complying with any and all 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 or State University of New York laws, rules, regulations or requirements that may be issued and/or amended during the bidding and/or performance of work on this Project.

END OF DOCUMENT

NAME OF BIDDER

ADDRESS OF BIDDER

EMAIL ADDRESS OF BIDDER

PROPOSAL FOR

Project Number: 2025-088 A- General Construction Date: _____
Project Name: Renovate Labs Furnas 913, 914 Disciplinary Excellence

TO THE STATE UNIVERSITY OF NEW YORK:

1. The Work Proposed Herein Will Be Completed Within the timeframe stated on page one of the Agreement. In the event the bidder fails to complete such work by said date or dates, or within the time to which such completion may have been extended in accordance with the Contract Documents, the bidder agrees to pay the University liquidated damages in an amount equal to the values indicate in the Liquidated Damages Schedule below for each calendar day of delay in completing the work.

LIQUIDATED DAMAGES SCHEDULE

Contract Amount	*Liquidated Damages*
Under $100,000	$100/day
$100,000-$499,999	$200/day
$500,000-$999,999	$300/day
$1MM-$1,999,999	$400/day
$2MM-$3,499,999	$500/day
$3.5MM-$5MM	$700/day
Over $5MM (to be determined by the University in each instance)	$_____/day

2. The bidder hereby declares that it has carefully examined all Bidding and Contract Documents and that it has personally 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 therefore the amount of the Total Bid, modified by such additive or deductive alternates, if any, as are accepted by the University.

4. The bidder further agrees to accept the unit prices, if any, set forth in paragraph (5) of this proposal, except as the same may be modified pursuant to the provisions of Section (5) of the Information to Bidders, as full payment for the amount of the credit to the University for any deletions, additions, modifications or changes to the portion or portions of work covered by said unit prices.

5. BID CALCULATION

a. BASE BID *(does not include allowances)*

$_____
(in numbers)

_____
(in words)

b. ALLOWANCES: In accordance with the Schedule II and Section 4.05 of Agreement, the bidder further agrees to the following additions to the Base Bid:

Work or Materials Description	Amount in Words	Amount in Figures
Field Order Allowance	One Hundred and Four Thousand, One Hundred Ninety-Five and Zero Cents	$104,195.00

c. TOTAL BID *(base bid + allowances = total bid)*

$_____**(in numbers)**

$_____ **(in words)**

d. ALTERNATES: In accordance with Section B of the General Requirements the bidder proposes the following additions to or deductions from the Total Bid for the alternates listed below:

Alternate Number	Add/Deduct	Amount in Words	Amount in Figures

e. **UNIT PRICES**: In accordance with Section (5) paragraph (2) of the Information to Bidders and Section 4.04 of the Agreement the bidder or the University may insert unit prices for the work or materials listed below for clarification.

Work or Materials Description	Amount in Words	Amount in Figures

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 its 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 Campus President, or designee, or Vice Chancellor for Capital Facilities, or 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 within (10) calendar days after date of receipt of a fully executed Agreement and that it will fully complete the work by the date stated herein.

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 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 by the Information for Bidders or (b) this Proposal is accepted by the University and the bidder shall refuse or neglect, within ten (10) calendar days after date of receipt of Agreement, to execute and deliver said Agreement in the form provided herein, or to execute and deliver a Performance Bond and a Labor and Material Bond in the amounts required and in the form prescribed, the bidder shall be liable to the University, 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 University 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 University is entitled, the bidder shall pay the difference, upon demand, to the University.

10. 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.

11. 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.

12. The bidder certifies that all information provided or to be provided to the University in connection with this procurement is, as required by Section 139-k of the State Finance Law, complete, true and accurate.

Dated _____/_____/_____

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

Legal name of person, partnership, joint venture or corporation:

_____

By_____
(signature)

Title_____

Email Address_____

ACKNOWLEDGMENT FOR THE PROPOSAL

THE LEGAL ADDRESS OF THE BIDDER

_____

_____

_____

_____

Telephone No._____ Facsimile No._____

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

_____ _____

Bidder Name: **Project No.:**

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

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

NAME OF BIDDER

ADDRESS OF BIDDER

EMAIL ADDRESS OF BIDDER

PROPOSAL FOR

Project Number: 2025-088 B - Electrical Date: _____
Project Name: Renovate Labs Furnas 913, 914 Disciplinary Excellence

TO THE STATE UNIVERSITY OF NEW YORK:

1. The Work Proposed Herein Will Be Completed Within the timeframe stated on page one of the Agreement. In the event the bidder fails to complete such work by said date or dates, or within the time to which such completion may have been extended in accordance with the Contract Documents, the bidder agrees to pay the University liquidated damages in an amount equal to the values indicate in the Liquidated Damages Schedule below for each calendar day of delay in completing the work.

LIQUIDATED DAMAGES SCHEDULE

Contract Amount	*Liquidated Damages*
Under $100,000	$100/day
$100,000-$499,999	$200/day
$500,000-$999,999	$300/day
$1MM-$1,999,999	$400/day
$2MM-$3,499,999	$500/day
$3.5MM-$5MM	$700/day
Over $5MM (to be determined by the University in each instance)	$_____/day

2. The bidder hereby declares that it has carefully examined all Bidding and Contract Documents and that it has personally 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 therefore the amount of the Total Bid, modified by such additive or deductive alternates, if any, as are accepted by the University.

4. The bidder further agrees to accept the unit prices, if any, set forth in paragraph (5) of this proposal, except as the same may be modified pursuant to the provisions of Section (5) of the Information to Bidders, as full payment for the amount of the credit to the University for any deletions, additions, modifications or changes to the portion or portions of work covered by said unit prices.

5. BID CALCULATION

a. BASE BID *(does not include allowances)*

$_____
(in numbers)

_____
(in words)

b. ALLOWANCES: In accordance with the Schedule II and Section 4.05 of Agreement, the bidder further agrees to the following additions to the Base Bid:

Work or Materials Description	Amount in Words	Amount in Figures
Field Order Allowance	Twenty-One Thousand, Sixty Hundred Seventy Dollars and Zero Cents	$21,670.00

c. TOTAL BID *(base bid + allowances = total bid)*

$_____**(in numbers)**

$_____ **(in words)**

d. ALTERNATES: In accordance with Section B of the General Requirements the bidder proposes the following additions to or deductions from the Total Bid for the alternates listed below:

Alternate Number	Add/Deduct	Amount in Words	Amount in Figures
1			

e. **UNIT PRICES**: In accordance with Section (5) paragraph (2) of the Information to Bidders and Section 4.04 of the Agreement the bidder or the University may insert unit prices for the work or materials listed below for clarification.

Work or Materials Description	Amount in Words	Amount in Figures

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 its 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 Campus President, or designee, or Vice Chancellor for Capital Facilities, or 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 within (10) calendar days after date of receipt of a fully executed Agreement and that it will fully complete the work by the date stated herein.

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 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 by the Information for Bidders or (b) this Proposal is accepted by the University and the bidder shall refuse or neglect, within ten (10) calendar days after date of receipt of Agreement, to execute and deliver said Agreement in the form provided herein, or to execute and deliver a Performance Bond and a Labor and Material Bond in the amounts required and in the form prescribed, the bidder shall be liable to the University, 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 University 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 University is entitled, the bidder shall pay the difference, upon demand, to the University.

10. 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.

11. 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.

12. The bidder certifies that all information provided or to be provided to the University in connection with this procurement is, as required by Section 139-k of the State Finance Law, complete, true and accurate.

Dated _____/_____/_____

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

Legal name of person, partnership, joint venture or corporation:

_____

By_____
(signature)

Title_____

Email Address_____

ACKNOWLEDGMENT FOR THE PROPOSAL

THE LEGAL ADDRESS OF THE BIDDER

_____

_____

_____

_____

Telephone No._____ Facsimile No._____

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

_____ _____

Bidder Name: **Project No.:**

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

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

NAME OF BIDDER

ADDRESS OF BIDDER

EMAIL ADDRESS OF BIDDER

PROPOSAL FOR

Project Number: 2025-088 C Mechanical Date: _____
Project Name: Renovate Labs Furnas 913, 914 Disciplinary Excellence

TO THE STATE UNIVERSITY OF NEW YORK:

1. The Work Proposed Herein Will Be Completed Within the timeframe stated on page one of the Agreement. In the event the bidder fails to complete such work by said date or dates, or within the time to which such completion may have been extended in accordance with the Contract Documents, the bidder agrees to pay the University liquidated damages in an amount equal to the values indicate in the Liquidated Damages Schedule below for each calendar day of delay in completing the work.

LIQUIDATED DAMAGES SCHEDULE

Contract Amount	*Liquidated Damages*
Under $100,000	$100/day
$100,000-$499,999	$200/day
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$1MM-$1,999,999	$400/day
$2MM-$3,499,999	$500/day
$3.5MM-$5MM	$700/day
Over $5MM (to be determined by the University in each instance)	$_____/day

2. The bidder hereby declares that it has carefully examined all Bidding and Contract Documents and that it has personally 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 therefore the amount of the Total Bid, modified by such additive or deductive alternates, if any, as are accepted by the University.

4. The bidder further agrees to accept the unit prices, if any, set forth in paragraph (5) of this proposal, except as the same may be modified pursuant to the provisions of Section (5) of the Information to Bidders, as full payment for the amount of the credit to the University for any deletions, additions, modifications or changes to the portion or portions of work covered by said unit prices.

5. BID CALCULATION

a. BASE BID *(does not include allowances)*

$_____

(in numbers)

_____

(in words)

b. ALLOWANCES: In accordance with the Schedule II and Section 4.05 of Agreement, the bidder further agrees to the following additions to the Base Bid:

Work or Materials Description	Amount in Words	Amount in Figures
Field Order Allowance	Twenty Thousand, Sixty-Seven and Zero Cents	$20,067.00

c. TOTAL BID *(base bid + allowances = total bid)*

$_____**(in numbers)**

$_____ **(in words)**

d. ALTERNATES: In accordance with Section B of the General Requirements the bidder proposes the following additions to or deductions from the Total Bid for the alternates listed below:

Alternate Number	Add/Deduct	Amount in Words	Amount in Figures

e. **UNIT PRICES**: In accordance with Section (5) paragraph (2) of the Information to Bidders and Section 4.04 of the Agreement the bidder or the University may insert unit prices for the work or materials listed below for clarification.

Work or Materials Description	Amount in Words	Amount in Figures

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 its 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 Campus President, or designee, or Vice Chancellor for Capital Facilities, or 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 within (10) calendar days after date of receipt of a fully executed Agreement and that it will fully complete the work by the date stated herein.

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 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 by the Information for Bidders or (b) this Proposal is accepted by the University and the bidder shall refuse or neglect, within ten (10) calendar days after date of receipt of Agreement, to execute and deliver said Agreement in the form provided herein, or to execute and deliver a Performance Bond and a Labor and Material Bond in the amounts required and in the form prescribed, the bidder shall be liable to the University, 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 University 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 University is entitled, the bidder shall pay the difference, upon demand, to the University.

10. 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.

11. 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.

12. The bidder certifies that all information provided or to be provided to the University in connection with this procurement is, as required by Section 139-k of the State Finance Law, complete, true and accurate.

Dated _____/_____/_____

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

Legal name of person, partnership, joint venture or corporation:

_____

By_____
(signature)

Title_____

Email Address_____

ACKNOWLEDGMENT FOR THE PROPOSAL

THE LEGAL ADDRESS OF THE BIDDER

_____

_____

_____

_____

Telephone No._____ Facsimile No._____

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

_____ _____

Bidder Name: **Project No.:**

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

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

NAME OF BIDDER

ADDRESS OF BIDDER

EMAIL ADDRESS OF BIDDER

PROPOSAL FOR

Project Number: 2025-088 D Plumbing/Fire Date: _____
Project Name: Renovate Labs Furnas 913, 914 Disciplinary Excellence

TO THE STATE UNIVERSITY OF NEW YORK:

1. The Work Proposed Herein Will Be Completed Within the timeframe stated on page one of the Agreement. In the event the bidder fails to complete such work by said date or dates, or within the time to which such completion may have been extended in accordance with the Contract Documents, the bidder agrees to pay the University liquidated damages in an amount equal to the values indicate in the Liquidated Damages Schedule below for each calendar day of delay in completing the work.

LIQUIDATED DAMAGES SCHEDULE

Contract Amount	*Liquidated Damages*
Under $100,000	$100/day
$100,000-$499,999	$200/day
$500,000-$999,999	$300/day
$1MM-$1,999,999	$400/day
$2MM-$3,499,999	$500/day
$3.5MM-$5MM	$700/day
Over $5MM (to be determined by the University in each instance)	$_____/day

2. The bidder hereby declares that it has carefully examined all Bidding and Contract Documents and that it has personally 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 therefore the amount of the Total Bid, modified by such additive or deductive alternates, if any, as are accepted by the University.

4. The bidder further agrees to accept the unit prices, if any, set forth in paragraph (5) of this proposal, except as the same may be modified pursuant to the provisions of Section (5) of the Information to Bidders, as full payment for the amount of the credit to the University for any deletions, additions, modifications or changes to the portion or portions of work covered by said unit prices.

5. BID CALCULATION

a. BASE BID *(does not include allowances)*

$_____

(in numbers)

_____

(in words)

b. ALLOWANCES: In accordance with the Schedule II and Section 4.05 of Agreement, the bidder further agrees to the following additions to the Base Bid:

Work or Materials Description	Amount in Words	Amount in Figures
Field Order Allowance	Fourteen Thousand, Eight Hundred, Ninety and Zero Cents	$14,890.00

c. TOTAL BID *(base bid + allowances = total bid)*

$_____**(in numbers)**

$_____ **(in words)**

d. ALTERNATES: In accordance with Section B of the General Requirements the bidder proposes the following additions to or deductions from the Total Bid for the alternates listed below:

Alternate Number	Add/Deduct	Amount in Words	Amount in Figures

e. **UNIT PRICES**: In accordance with Section (5) paragraph (2) of the Information to Bidders and Section 4.04 of the Agreement the bidder or the University may insert unit prices for the work or materials listed below for clarification.

Work or Materials Description	Amount in Words	Amount in Figures

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 its 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.

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   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.

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_____	___/___/___	_____	___/___/___

_____ ___/___/___ _____ ___/___/___

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Dated _____/_____/_____

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

Legal name of person, partnership, joint venture or corporation:

_____

By_____
(signature)

Title_____

Email Address_____

ACKNOWLEDGMENT FOR THE PROPOSAL

THE LEGAL ADDRESS OF THE BIDDER

_____

_____

_____

_____

Telephone No._____ Facsimile No._____

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

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Bidder Name: **Project No.:**

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

PART 1 - GENERAL

1.1 EXISTING HAZARDOUS MATERIAL INFORMATION

A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for the Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information. This Document and its attachments are not part of the Contract Documents.

B. An existing asbestos report for Project, prepared by Encorus Group, dated December 24, 2024, is available for viewing as appended to this Project Manual.

C. An existing lead report for Project, prepared by Encorus Group, dated December 24, 2024, is available for viewing as appended to this Project Manual.

D. An existing PCB (Polychlorinated Biphenyl) information report for Project, prepared by Encorus Group, dated December 24, 2024, is available for viewing as appended to this Project Manual.

E. Related Requirements:

1. Division 02 Sections for abatement of hazardous materials.
2. Section 024119 "Selective Demolition" for notification requirements if materials suspected of containing hazardous materials are encountered.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)

END OF DOCUMENT 003126

ENCORUS GROUP

23 Mechanic Street
Springville, NY 14141

295 Main Street
West Seneca, NY 14224

encorus.com
716.592.3980

November 16, 2023
Revised: March 27, 2025

Yadira DeSantis
Kideney Architects
143 Genesee Street
Buffalo, New York 14203

Re: Pre-Renovation Asbestos-Containing Materials, Lead-Based Paint, Exterior PCB-Containing Materials and Inspection Report
Renovate Furnas Hall - Lab 514 & 913/914
UB Project No. 2023-047/48
215 Mary Talbert Way
Buffalo, NY 14260
EG24631

Dear Yadira DeSantis:

Enclosed please find a copy of the Asbestos-Containing Materials, Lead-Based Paint and Exterior PCB-Containing Materials Inspection Report for UB Renovate Furnas Hall - Lab 514 & 913/914, 215 Mary Talbert Way Buffalo, NY 14203. Should you have any questions please do not hesitate to contact our office at 716.332.3134. Thank you for the opportunity to be of service to Kideney Architects.

Sincerely,

Matthew Inman
Project Manager

Enclosures

Pre-Renovation
Asbestos-Containing Materials,
Lead-Based Paint and
Exterior PCB-Containing Materials
Inspection Report

OF THE:

Renovate Furnas Hall - Lab 514 & 913/914
UB Project No. 2023-047/48
215 Mary Talbert Way
Buffalo, NY 14260
EG24631

PREPARED BY:

ENCORUS® GROUP

PREPARED FOR:

Kideney Architects
143 Genesee Street
Buffalo, NY 14203

CONDITIONS AS OF:

March 21, 2025

ENCORUS GROUP

23 Mechanic Street
Springville, NY 14141

295 Main Street
West Seneca, NY 14224

encorus.com
716.592.3980

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ENCORUS GROUP

23 Mechanic Street
Springville, NY 14141

295 Main Street
West Seneca, NY 14224

encorus.com
716.592.3980

1 Introduction

Encorus Group (Encorus) was retained by Kideney Architects to perform an inspection of Furnas Hall - Lab 514 & 913/914, located at 215 Mary Talbert Way in Buffalo, NY to determine the presence of asbestos-containing materials, lead-based painted/coated materials and exterior PCB-containing caulks, glazing and sealants prior to work associated with the UB Renovate Furnas Hall – Lab 514 & 913/914 project.

The inspection was conducted on October 25, 2023, December 17, 2024, and March 21, 2025.

The scope of inspection work provided is as indicated in the proposal for Inspection Services dated February 13, 2023 and includes the following:

- The scope of this project shall be to renovate existing Chemical and Biological Engineering laboratory spaces 514 & 913/914 within Furnas Hall.

Samples of additional materials were obtained during site visits on December 17, 2024 and March 21, 2025; findings are included within this revised report.

Encorus was charged with conducting the following tasks for this project:

1. Conducting an asbestos inspection in accordance with all applicable regulations,
2. Performing an inspection via X-Ray Florescence (XRF) for lead in accordance with all applicable regulations and guidelines,
3. Sampling exterior caulks, glazing and sealants for PCB-containing materials in accordance with all applicable regulations and guidelines, and
4. Providing a summary report of findings.

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

2 Asbestos-Containing Materials Inspection

2.1 Methodology

All asbestos inspection work performed by Encorus Group was conducted in accordance with applicable regulations including New York State Department of Labor standards 12 NYCRR Part 56, National Emission Standards for Hazardous Air Pollutants (NESHAPS), the Asbestos Hazard Emergency Response Act, and Occupational Safety and Health Administration regulations. All Encorus Groups ' personnel assigned to conduct inspections have completed the Environmental Protection Agency (EPA) required training and New York State Department of Labor Division of Safety and Health certification program.

Based on the functional spaces and homogeneous areas (materials uniform in color or texture) identified by Sienna, samples of suspect materials were collected. Techniques used for sample collection were designed to minimize damage to suspected areas, reduce any potential for fiber release, and ensure the safety of the inspector and building occupants.

Samples were analyzed using Polarized Light Microscopy (PLM) in accordance with NYS DOH ELAP Item #198.1 or #198.6. For materials classified as non-friable organically bound materials (NOBs) that were analyzed as equal to or less than 1% asbestos by PLM, additional analysis was performed under Transmission Electron Microscopy (TEM) in accordance with NYS DOH ELAP Item #198.4. The results of this analysis confirmed whether or not a suspect material actually contained asbestos. The confirmed materials and all assumed materials are listed in **Section 2.3 Confirmed Asbestos-Containing Materials and Section 2.4 Assumed Asbestos-Containing Suspect Materials.**

Although the report is a comprehensive analysis of the asbestos inspection work performed, it would be helpful to review all applicable federal, state and local rules, laws and regulations regarding the handling and treatment of asbestos-containing materials (ACM). The following is a list of suggested reading and information sources relating to asbestos:

- New York State Department of Labor Industrial Code Rule 56
- Occupational Safety and Health Administration
- Environmental Protection Agency Rule CFR 763.86 Asbestos Hazard Emergency Response Act
- Environmental Protection Agency Rule 40 CFR, Chapter 61, Subpart M of the National Emission Standards for Hazardous Air Pollutants (NESHAPS)

2.2 Executive Summary

The asbestos inspection included identification, sampling, analysis, and quantification of suspect materials that may be disturbed by the project. By definition an Asbestos-Containing Material (ACM) is any material which contains greater than one percent (>1%) asbestos. Materials which contain asbestos in measurable concentrations less than or equal to one percent (≤1%) are reported as containing "trace" amounts.

Copies of all laboratory analysis reports and chains of custody listing locations of sample collection are located in Appendix C. Refer to floor plans located in Appendix E for specific sample location points. Refer to Appendix F for a summary of all functional spaces which were included as part of this inspection service. For explanation of inspection notes, refer to Section 2.7 for note details and specific comments.

2.3 Confirmed Asbestos-Containing Materials

The following materials have been sampled and analyzed by current EPA AHERA and ELAP protocols and have been proven to contain greater than one percent (>1%) asbestos. Refer to the summary table within Section 2.6 for a listing of the locations, conditions, and quantities for each asbestos-containing material.

HAN Number	Material Description	Comments
FLOORS (300s)		
300.2	12" x 12" Floor Tile - Black	Photo #1
300.3	12" x 12" Floor Tile - Black Mastic	Photo #1
301.1	12" x 12" Floor Tile - Black	Photo #2
301.2	12" x 12" Floor Tile - Black Mastic	Photo #2, Homogeneous to HAN302.2
302.1	12" x 12" Floor Tile - Brown, Black Mottled	Photo #2
302.2	12" x 12" Floor Tile - Mastic	Homogeneous to 301.2, Photo #2
304.2	12" x 12" Floor Tile - Black Mottled Mastic	Photo #3
305.2	12" x 12" Floor Tile - Brown Mottled Mastic	Photo #4
MISCELLANEOUS (600s)		
608	Cement Board Paneling Associated w/ Fume Hood	Photo #5 Sampled 12/17/2024

2.4 Assumed Asbestos-Containing Suspect Materials

No suspect Asbestos-Containing Materials have been assumed to be Asbestos-Containing Materials. Refer to Sections 2.3 and 2.5.

2.5 Confirmed Non-Asbestos Containing Materials

These materials were sampled and analyzed by current EPA AHERA and ELAP protocols and were proven to contain one percent asbestos or less (≤1%).

HAN Number	Material Description	Comments
WALLS (100s)		
100.1	Gypsum Board	Homogeneous to HAN201
100.2	Joint Compound	---
101.1	Gypsum Board - Mechanical Room	Sampled 03/21/2025
101.2	Joint Compound - Mechanical Room	
CEILINGS (200s)		
200	2' x 2' Ceiling Tile - Pinhole & Chip	---
201	Rubber Coated Gypsum Board	Homogeneous to HAN100.1
202	2' x 4' Ceiling Tile – Dot & Fissure	Sampled 12/17/2024
FLOORS (300s)		
300.1	Carpet Mastic - Yellow	---
303.1	Vinyl Flooring - Tan	---
303.2	Vinyl Flooring - Tan Mastic	---
304.1	12" x 12" Floor Tile - Black Mottled	---
305.1	12" x 12" Floor Tile - Brown Mottled	---
306	Epoxy Floor Covering, Red	Sampled 12/17/2024
THERMAL SYSTEM INSULATION (500s)		
500	Spray-On Fireproofing - Tan	Note 2
MISCELLANEOUS (600s)		
600	Cove Base Adhesive - Brown	---
601	Cove Base Adhesive - Beige	---
602	Cove Base Adhesive - Yellow	---
603	Fiberglass Jacket Batt Tar - Black	---
604	Sink Undercoating - Black, Smooth	---
605	Duct Seam Tape - White, Yellow	---
606	Fire Caulk - Red	---
607	Sink Undercoating – Black, Tar	Trace, <1% Asbestos
609	Concrete Pillar Joint Sealant - Grey	Sampled 12/17/2024 Trace, <1% Asbestos
611.1	Lab Bench Tabletop Slab - Black	Sampled 03/21/2025
611.2	Lab Bench Tabletop Grout - Grey	
612	Formed Concrete Duct Insulation - Red	
613	Bituminous HVAC Seam Gasket Putty - Black	
614	Duct Seam Tape - OLD	

2.6 Summary Table of Asbestos-Containing Materials

The following table summarizes the functional spaces that were included in the inspection and contain materials which were verified or assumed to be asbestos-containing materials.

Functional Space ID/ Description	HAN	Material Description	ACM	Approximate Quantity	Condition	Friability
C510 – Corridor	301.1	12" x 12" Floor Tile - Black	Yes	244 SF	Intact	Non- Friable
	301.2	12" x 12" Floor Tile - Black Mastic	Yes		Intact	Non- Friable
	302.1	12" x 12" Floor Tile Brown, Black Mottled	Yes	244 SF	Intact	Non- Friable
	302.2	12" x 12" Floor Tile - Mastic	Yes		Intact	Non- Friable
514 - Chemical & Biological Engineering Department	300.2	12" x 12" Floor Tile - Black	Yes	975 SF	Intact	Non- Friable
	300.3	12" x 12" Floor Tile – Black Mastic	Yes		Intact	Non- Friable
516 - Can Lab	301.1	12" x 12" Floor Tile - Black	Yes	685 SF	Intact	Non- Friable
	301.2	12" x 12" Floor Tile - Black Mastic	Yes		Intact	Non- Friable
	302.1	12" x 12" Floor Tile Brown, Black Mottled	Yes	685 SF	Intact	Non- Friable
	302.2	12" x 12" Floor Tile - Mastic	Yes		Intact	Non- Friable
C902 – Corridor	301.1	12" x 12" Floor Tile - Black	Yes	440 SF	Intact	Non- Friable
	301.2	12" x 12" Floor Tile - Black Mastic	Yes		Intact	Non- Friable
	302.1	12" x 12" Floor Tile Brown, Black Mottled	Yes	440 SF	Intact	Non- Friable
	302.2	12" x 12" Floor Tile - Mastic	Yes		Intact	Non- Friable
C910 – Corridor	301.1	12" x 12" Floor Tile - Black	Yes	227 SF	Intact	Non- Friable
	301.2	12" x 12" Floor Tile - Black Mastic	Yes		Intact	Non- Friable
	302.1	12" x 12" Floor Tile Brown, Black Mottled	Yes	227 SF	Intact	Non- Friable
	302.2	12" x 12" Floor Tile - Mastic	Yes		Intact	Non- Friable
909 – Cell Culture Lab	301.1	12" x 12" Floor Tile - Black	Yes	197 SF	Intact	Non- Friable
	301.2	12" x 12" Floor Tile - Black Mastic	Yes		Intact	Non- Friable
	302.1	12" x 12" Floor Tile Brown, Black Mottled	Yes	197 SF	Intact	Non- Friable
	302.2	12" x 12" Floor Tile - Mastic	Yes		Intact	Non- Friable
910 - Enzyme Engineering	301.1	12" x 12" Floor Tile - Black	Yes	499 SF	Intact	Non- Friable
	301.2	12" x 12" Floor Tile - Black Mastic	Yes		Intact	Non- Friable
	302.1	12" x 12" Floor Tile - Brown, Black Mottled	Yes	499 SF	Intact	Non- Friable
	302.2	12" x 12" Floor Tile - Mastic	Yes		Intact	Non- Friable
	608	Cement Board Paneling	Yes	10 SF	Intact	Non- Friable
913 - Vascular Engineering	301.1	12" x 12" Floor Tile - Black	Yes	325 SF	Intact	Non- Friable
	302.1	12" x 12" Floor Tile - Brown, Black Mottled	Yes		Intact	Non- Friable
913D - Sterile Room	302.1	12" x 12" Floor Tile - Brown, Black Mottled	Yes	130 SF	Intact	Non- Friable
	302.1	12" x 12" Floor Tile - Brown, Black Mottled	Yes		Intact	Non- Friable

Functional Space ID/ Description	HAN	Material Description	ACM	Approximate Quantity	Condition	Friability
914 - Biological Engineering	301.1	12" x 12" Floor Tile Black	Yes	325 SF	Intact	Non- Friable
	301.2	12" x 12" Floor Tile - Black Mastic	Yes		Intact	Non- Friable
	302.1	12" x 12" Floor Tile - Brown, Black Mottled	Yes	325 SF	Intact	Non- Friable
	302.2	12" x 12" Floor Tile - Mastic	Yes		Intact	Non- Friable
914A - Glassware Washing	304.2	12" x 12" Floor Tile - Black Mottled Mastic	Yes	330 SF	Intact	Non- Friable
	304.2	12" x 12" Floor Tile - Black Mottled Mastic	Yes		Intact	Non- Friable
914B - Cell Culture Lab	301.1	12" x 12" Floor Tile - Black	Yes	110 SF	Intact	Non- Friable
	301.2	12" x 12" Floor Tile - Black Mastic	Yes		Intact	Non- Friable
	302.1	12" x 12" Floor Tile - Brown, Black Mottled	Yes	110 SF	Intact	Non- Friable
	302.2	12" x 12" Floor Tile - Mastic	Yes		Intact	Non- Friable
914C - Sterile Room - Eukaryotes	305.2	12" x 12" Floor Tile - Brown Mottled Mastic	Yes	100 SF	Intact	Non- Friable
914D - Metabolic Engineering	301.1	12" x 12" Floor Tile - Black	Yes	90 SF	Intact	Non- Friable
	301.2	12" x 12" Floor Tile - Black Mastic	Yes		Intact	Non- Friable
	302.1	12" x 12" Floor Tile - Brown, Black Mottled	Yes	90 SF	Intact	Non- Friable
	302.2	12" x 12" Floor Tile - Mastic	Yes		Intact	Non- Friable
	304.2	12" x 12" Floor Tile - Black Mottled Mastic	Yes	90 SF	Intact	Non- Friable
	608	Cement Board Paneling	Yes	30 SF	Intact	Non- Friable
916 – BioChem Engineering	608	Cement Board Paneling	Yes	55 SF	Intact	Non- Friable

2.7 Inspection Notes

Note #	Description
2	Review of client supplied documents identified that the material had been previously sampled and analyzed by all current NYSDOL and ELAP protocols and determined to contain less than 1% asbestos. Please refer to the previous inspection reports located in Appendix F of this report.

3 Lead-Based Paint Inspection

3.1 Methodology

Encorus Group used a spectrum analyzer (Refer to Appendix D for additional information) to test painted or coated surfaces included in the scope of work. The analyzer measures the amount of lead in painted surfaces using X-Ray Fluorescence technology (XRF). The analyzer uses a radioactive source which locates lead atoms in painted surfaces and measures the concentration in milligrams per square centimeter. If necessary, paint chip samples were also collected as part of this inspection. Representative surfaces/components were tested in a manner designed to adequately represent the different components, substrates, types of paint, construction and paint history. Various federal, state and local laws, rules, regulations and guidelines may be applicable to this project as it relates to Lead-Based Paint/coatings (LBP) including but not limited to:

1. Lead-Based Paint Renovation, Repair and Painting Regulation Rule (40 CFR Part 745.8 Subpart E (EPA))
2. Lead Safe Housing Rule (HUD 24 CFR Part 35)
3. Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (US Department of Housing and Urban Development (HUD))
4. Occupational Safety and Health Administration (OSHA 29 CFR 1910 and 1926)
5. New York State Education Department (NYSED)
6. State of New York codes and laws
7. All local codes
8. All federal codes
9. US-DOT 49 CFR

The most recent edition of any relevant regulation, standard, document, or code shall be applicable to the work. Where conflict among the requirements exists, the most stringent requirements are generally applicable.

3.2 HUD/ EPA Standards

Certain HUD and EPA standards apply to "Lead-Based Paint" which is any paint or coating which contains lead at or above 1.0 mg/cm^2 (via XRF), or 0.5 percent by weight (paint chip). Analysis indicated that components, listed in Section 3.3, have a lead content equal to or greater than the HUD/EPA standard for Lead-Based Paint.

3.3 Summary Table of Lead-Based Painted/Coated Materials

Functional Space ID/ Description	Material Description	Approximate Quantity	Condition	Positive or Homogeneous with Shot #
514 - Chemical & Biological Engineering Department	No Lead-Based Painted/Coated components were detected within the scope of work.			
514A - Chemical & Biological Engineering Department				
514B - Chemical & Biological Engineering Department				
514C - Chemical & Biological Engineering Department				
514D - Chemical & Biological Engineering Department				
516 - Can Lab	Red Metal Lab Table Drawer	50 SF	Intact	127
516A - Can Lab	No Lead-Based Patin/Coated components were detected within the scope of work.			
516B - Can Lab				
910 - Enzyme Engineering				
913 - Vascular Engineering				
913A – Cooler				
913B – Cooler				
913C – Storage				
913D - Sterile Room				
914 - Biological Engineering				
914A - Glassware Washing				
914B - Cell Culture Lab				
914C - Sterile Room – Eukaryotes				
914D - Metabolic Engineering				

The presence of lead in surfaces that were analyzed as less than 0.5 percent lead by weight or in measurable amounts but less than 1.0 mg/cm^2 is a consideration for the purposes of complying with OSHA regulations. Refer to Section 3.4 for details.

3.4 OSHA Regulations

On May 4, 1993, OSHA promulgated the Lead Exposure in Construction Rule (29 CFR Part 1926.62). This regulation applies to all construction activities involving potential lead exposures. This regulation applies when lead is present in any detectible amount and is not limited to HUD's definition of Lead-Based Paint. Surface abrading and demolition activities may release lead from unpainted materials which contain lead such as glazed ceramic tile and porcelain, or enameled wall panels. Although these items do not meet HUD's definition of Lead-Based Paint and need not be included in disclosure under the Lead Disclosure Rule (Refer to Section 3.5), they have been included for reference in Section 3.3 above.

3.5 Disclosure Requirements

If the subject property of this report is target housing, the owner has certain responsibilities under the Lead Disclosure Rule when the property is being sold or leased, or when a lease is being renewed with revisions. In general, lead disclosure is required in these circumstances, except that disclosure does not have to be made when the target housing is being leased if the inspection has found that it is Lead-Based Paint free.

Per 40 CFR Part 745 "Target Housing" is defined as: any housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless any child who is less than 6 years of age resides or is expected to reside in such housing); or any 0-bedroom dwelling.

Results of this inspection must be provided to new lessees (tenants) and prospective buyers of this property under Federal law (24 CFR part 35 and 40 CFR part 745) before they become obligated under a lease or sales contract. The complete report must be provided by the owner to prospective buyers and it must be made available to prospective tenants and to renewing tenants if they have not been provided the information previously. The Inspector's plain language summary of the report must be provided to the client (e.g., property owner or manager) when the complete report is provided. The landlord (lessor) or seller is also required to distribute an educational pamphlet approved by the U.S. Environmental Protection Agency and include the Lead Warning Statement in the lease or sale contracts to ensure that parents have the information they need to protect their children from Lead-Based Paint hazards. Complete disclosure requires the landlord/sellers and renters/buyers (and their agents) to sign and date an acknowledgement that the required information and materials were provided and received. Also, prospective buyers must be provided the opportunity to have their own Lead-Based Paint inspection, lead hazard screen or risk assessment performed before the purchase agreement is signed; the standard period is 10 days, but this period may be changed or waived by agreement between the seller and prospective buyer. EPA regulations require the inspector to keep the inspection report for at least 3 years. (See Section IV of Chapter 7 of the HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing for further details; see www.hud.gov/lead.)

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4 PCB Inspection

The inspection revealed no materials identified as suspect exterior PCB-containing caulking, glazing, or sealant materials.

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Appendix A

General Conditions of Inspection

1. Encorus Group Engineering, P.C. neither accepts nor implies any liability for the implementation of the recommendations found within this report.

2. This inspection was limited to areas accessible to the inspector. Encorus Group Engineering, P.C. neither accepts nor implies any liability for hazardous materials that may be present in other areas of the building.

3. The results of the laboratory analytical reports that may be contained herein are the product of the knowledge, experience and expertise of the laboratory retained to perform such services. Encorus Group neither accepts nor implies any liability for sample analysis reports compiled by others.

4. This report is based on the condition and contents present at the site on the day of the inspection. Encorus Group Engineering, P.C. is not liable for materials, chemicals or other substances of concern that may have been removed from the site, cleaned or disposed of prior to the inspection date or subsequent to that date.

5. An inspection for Asbestos-Containing Materials, Lead-Based Paint or PCB-Containing Materials relies heavily upon identification of homogeneous areas, with subsequent sampling and laboratory analysis determined by: the quantity of surfaces identified, generally accepted inspection protocols, regulatory requirements, and the inspector's judgment. Specific sample locations are determined with the objective of selecting representative samples. As with any type of sampling, the possibility of obtaining a false positive or false negative does exist, is inherent in the sampling process, and can at times result from the uneven distribution of target analytes within the suspect material. The comprehensive inspection protocol developed and utilized by Encorus Group Engineering, P.C. attempts to minimize the risk of a false positive or false negative result. However, the client is advised that the risk of false positives or false negatives cannot be completely eliminated.

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Appendix B

Certifications and Licenses

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

Encorus Group Engineering, P.C.
P.O. Box 344, Springville, NY, 14141

License Number: 421634
License Class: RESTRICTED
Date of Issue: 11/26/2024
Expiration Date: 11/30/2025
Duly Authorized Representative: Thomas Gilmartin

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

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

Amy Phillips, Director
For the Commissioner of Labor

EXCELSIOR

SH 432 (12/21)

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

Sienna Environmental Technologies, LLC
350 Elmwood Avenue, Buffalo, NY, 14222

License Number: 29432
License Class: RESTRICTED
Date of Issue: 02/28/2023
Expiration Date: 03/31/2024
Duly Authorized Representative: Susanne Kelley

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

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

Amy Phillips, Director
For the Commissioner of Labor

EXCELSIOR

SH 432 (12/21)

United States Environmental Protection Agency

This is to certify that

Encorus Group Engineering, P.C.

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

In the Jurisdiction of:

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

This certification is valid from the date of issuance and expires November 30, 2026

LBP-F256665-1

Certification #

November 16, 2023

Issued On

Michelle Price, Chief

Lead, Heavy Metals, and Inorganics Branch

United States Environmental Protection Agency

This is to certify that

Sienna Environmental Technologies, LLC

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

In the Jurisdiction of:

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

This certification is valid from the date of issuance and expires November 20, 2024

LBP-599-2

Certification #

June 15, 2021

Issued On

Michelle Price, Chief

Lead, Heavy Metals, and Inorganics Branch

STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE

N.Y.S

DANIEL G KORFF
CLASS(EXPIRES)
C ATEC (12/25) D INSP (12/25)
H PM (12/25) I PD (12/25)

CERT# 24-6L3AK-SHAB
DMV# 989893651

MUST BE CARRIED ON ASBESTOS PROJECTS

01213 007423719 98

IF FOUND, RETURN TO:
NYSDOL - L&C UNIT
ROOM 161A BUILDING 12
STATE OFFICE CAMPUS
ALBANY NY 12226

STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE

N.Y.S

DANIEL G KORFF
CLASS(EXPIRES)
I PD (12/25) C ATEC (12/24)
D INSP (12/24) H PM (12/24)

CERT# 24-6L3AK-SHAB
DMV# 989893651

MUST BE CARRIED ON ASBESTOS PROJECTS

01213 007310289 97

IF FOUND, RETURN TO:

NYSDOL - L&C UNIT

ROOM 161A BUILDING 12

STATE OFFICE CAMPUS

ALBANY NY 12226

STATE OF NEW YORK - DEPARTMENT OF LABOR

ASBESTOS CERTIFICATE

N.Y.S

DANIEL G KORFF

CLASS(EXPIRES)

C ATEC(12/23) D INSP(12/23)

H PM (12/23)

CERT# 21-08050

DMV# 989893651

MUST BE CARRIED ON ASBESTOS PROJECTS

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2025
Issued April 01, 2024

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. CORY M. PARNELL
AMERISCI RICHMOND
13635 GENITO RD
MIDLOTHIAN, VA 23112

NY Lab Id No: 10984

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
Asbestos-Vermiculite-Containing Mate	Item 198.8 of Manual

Serial No.: 68665

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

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

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

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

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Asbestos in Non-Friable Material-TEM	Item 198.4 of Manual
Asbestos-Vermiculite-Containing Mate	Item 198.8 of Manual

Serial No.: 66278

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.

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Appendix C

Chains of Custody and Laboratory Reports

AmeriSci Richmond
13635 GENITO ROAD
MIDLOTHIAN, VIRGINIA 23112
TEL: 8047631200 FAX: 8047631800

November 7, 2023

Sienna Environmental Technologies, LLC
Attn: Susanne Kelley
350 Elmwood Ave
Buffalo, NY 14222

RE: Sienna Environmental Technologies, LLC
Job Number 123111018
P.O. #4166
4166; Kideney Architects / Yadira DeSantis; UB Renovate Furnas Hall - Lab 514 & 913/914 215 Mary Talbert Way Buffalo, NY

Dear Susanne Kelley:

Enclosed are the results of Asbestos Analysis - Bulk Protocol of the following Sienna Environmental Technologies, LLC samples, received at AmeriSci on Wednesday, November 1, 2023, for a 5 day turnaround:

Sample ID 20231026-4166-100.1-1 through 20231026-4166-607-2

The 46 samples, placed in zip lock bag, were shipped to AmeriSci via Fed Ex 7088 6977 9718 B 1040. Sienna Environmental Technologies, LLC requested ELAP PLM/TEM analysis of these samples.

The results of the analyses which were performed under NYSDOH ELAP Lab Certification # 10984 following ELAP 198.4 TEM guidelines are presented within the Summary Table of this report. The presence of matrix reduction data in the Summary Table normally indicates an NOB sample. For NOB samples the individual matrix reduction and TEM analysis results are listed in Table I. Complete PLM results for individual samples analyzed by ELAP 198.1 (friable) and ELAP 198.6 (NOB) are presented in the PLM Bulk Asbestos Report. This combined report relates ONLY to sample analysis expressed as percent composition by weight and percent asbestos. This report must not be used to claim product endorsement or approval by these laboratories, NVLAP, ELAP or any other associated agency. The National Institute of Standards and Technology accreditation requirements, mandate that this report must not be reproduced, except in full without the written approval of the laboratory. This report may contain specific data not covered by NVLAP or ELAP accreditations respectively, if so identified in relevant footnotes.

AmeriSci appreciates this opportunity to serve your organization. Please contact us for any further assistance or with any questions.

Sincerely,

Cory M. Parnell

Laboratory Director | Authorized Signatory

AmeriSci Richmond
13635 GENITO ROAD
MIDLOTHIAN, VIRGINIA 23112
TEL: (804) 763-1200 • FAX: (804) 763-1800

PLM Bulk Asbestos Report

Sienna Environmental Technologies, LLC
Attn: Susanne Kelley
350 Elmwood Ave

Buffalo, NY 14222

Date Received 11/01/23
Date Examined 11/07/23
ELAP # 10984

AmeriSci Job # 123111018
P.O. #
Page 1 of 9

RE: 4166; Kideney Architects / Yadira DeSantis; UB Renovate Furnas Hall - Lab 514 & 913/914 215 Mary Talbert Way Buffalo, NY

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
20231026-4166-100.1-1 100.1 **Location:** Gypsum Board; 516B	123111018-01	***No***	NAD (by NYS ELAP 198.1) by David W. Ralbovsky on 11/07/23
Analyst Description: Brown/White, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 7.0%, Non-fibrous 93%			
20231026-4166-100.1-2 100.1 **Location:** Gypsum Board; 516A	123111018-02	***No***	NAD (by NYS ELAP 198.1) by David W. Ralbovsky on 11/07/23
Analyst Description: Brown/White, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 7.0%, Non-fibrous 93%			
20231026-4166-100.2-1 100.2 **Location:** Joint Compound; 516B	123111018-03	***No***	NAD (by NYS ELAP 198.1) by David W. Ralbovsky on 11/07/23
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
20231026-4166-100.2-2 100.2 **Location:** Joint Compound; 516A	123111018-04	***No***	NAD (by NYS ELAP 198.1) by David W. Ralbovsky on 11/07/23
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%			
20231026-4166-200-1 200 **Location:** 2' x 2' Ceiling Tile - Pinhole & Chip; 514	123111018-05	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/06/23
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 46%			

See Reporting notes on last page

PLM Bulk Asbestos Report

4166; Kideney Architects / Yadira DeSantis; UB Renovate
Furnas Hall - Lab 514 & 913/914 215 Mary Talbert Way Buffalo, NY

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
20231026-4166-200-2 200 **Location:** 2' x 2' Ceiling Tile - Pinhole & Chip; 514B	123111018-06	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/06/23
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 51%			
20231026-4166-300.1-1 300.1 **Location:** Carpet Mastic - Yellow; 514B	123111018-07	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/06/23
Analyst Description: Yellow, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 28%			
20231026-4166-300.1-2 300.1 **Location:** Carpet Mastic - Yellow; 514B	123111018-08	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/06/23
Analyst Description: Yellow, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 39%			
20231026-4166-300.2-1 300.2 **Location:** 12" x 12" Floor Tile - Black; 514B	123111018-09	***Yes***	0.4% (NOB by EPA 600/M4-82-020) by David W. Ralbovsky on 11/06/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 0.4% **Other Material:** Non-Asbestos 14%			
20231026-4166-300.2-2 300.2 **Location:** 12" x 12" Floor Tile - Black; 514B	123111018-10	***Yes***	1.5% (NOB by EPA 600/M4-82-020) by David W. Ralbovsky on 11/06/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 1.5% **Other Material:** Non-Asbestos 59%			
20231026-4166-300.3-1 300.3 **Location:** 12" x 12" Floor Tile - Black Mastic; 514B	123111018-11	***Yes***	1.8% (NOB by EPA 600/M4-82-020) by David W. Ralbovsky on 11/06/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 1.8% **Other Material:** Non-Asbestos 39%			

See Reporting notes on last page

PLM Bulk Asbestos Report

4166; Kideney Architects / Yadira DeSantis; UB Renovate
Furnas Hall - Lab 514 & 913/914 215 Mary Talbert Way Buffalo, NY

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
20231026-4166-300.3-2	123111018-12		NA/PS
300.3	**Location:** 12" x 12" Floor Tile - Black Mastic; 514B		
Analyst Description: Bulk Material **Asbestos Types:** **Other Material:**			
20231026-4166-301.1-1	123111018-13	***Yes***	1.5% (NOB by EPA 600/M4-82-020) by David W. Ralbovsky on 11/06/23
301.1	**Location:** 12" x 12" Floor Tile - Black; 913		
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 1.5% **Other Material:** Non-Asbestos 45%			
20231026-4166-301.1-2	123111018-14		NA/PS
301.1	**Location:** 12" x 12" Floor Tile - Black; 914D		
Analyst Description: Bulk Material **Asbestos Types:** **Other Material:**			
20231026-4166-301.2-1	123111018-15	***Yes***	2.4% (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/06/23
301.2	**Location:** 12" x 12" Floor Tile - Black Mastic; 913		
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 2.4% **Other Material:** Non-Asbestos 13%			
20231026-4166-301.2-2	123111018-16		NA/PS
301.2	**Location:** 12" x 12" Floor Tile - Black Mastic; 914D		
Analyst Description: Bulk Material **Asbestos Types:** **Other Material:**			
20231026-4166-302.1-1	123111018-17	***Yes***	2.1% (NOB by EPA 600/M4-82-020) by David W. Ralbovsky on 11/07/23
302.1	**Location:** 12" x 12" Floor Tile - Brown, Black Mottled; 913		
Analyst Description: Brown, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 2.1% **Other Material:** Non-Asbestos 53%			

See Reporting notes on last page

PLM Bulk Asbestos Report

4166; Kideney Architects / Yadira DeSantis; UB Renovate
Furnas Hall - Lab 514 & 913/914 215 Mary Talbert Way Buffalo, NY

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
20231026-4166-302.1-2 302.1	123111018-18 **Location:** 12" x 12" Floor Tile - Brown, Black Mottled; 914D		NA/PS
Analyst Description: Bulk Material **Asbestos Types:** **Other Material:**			
20231026-4166-303.1-1 303.1	123111018-19 **Location:** Vinyl Flooring - Tan; 913C	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 33%			
20231026-4166-303.1-2 303.1	123111018-20 **Location:** Vinyl Flooring - Tan; 913C	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 31%			
20231026-4166-303.2-1 303.2	123111018-21 **Location:** Vinyl Flooring - Tan Mastic; 913C	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Brown, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 30%			
20231026-4166-303.2-2 303.2	123111018-22 **Location:** Vinyl Flooring - Tan Mastic; 913C	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Brown, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 27%			
20231026-4166-304.1-1 304.1	123111018-23 **Location:** 12" x 12" Floor Tile - Black Mottled; 914D	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 57%			

See Reporting notes on last page

PLM Bulk Asbestos Report

4166; Kideney Architects / Yadira DeSantis; UB Renovate
Furnas Hall - Lab 514 & 913/914 215 Mary Talbert Way Buffalo, NY

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
20231026-4166-304.1-2 304.1	123111018-24 **Location:** 12" x 12" Floor Tile - Black Mottled; 914A	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 42%			
20231026-4166-304.2-1 304.2	123111018-25 **Location:** 12" x 12" Floor Tile - Black Mottled Mastic; 914D	***Yes***	Trace (<0.3 % pc) (NOB by EPA 600/M4-82-020) by David W. Ralbovsky on 11/07/23
Analyst Description: Brown, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile <0.3 % pc **Other Material:** Non-Asbestos 12%			
20231026-4166-304.2-2 304.2	123111018-26 **Location:** 12" x 12" Floor Tile - Black Mottled Mastic; 914A	***Yes***	1.3% (NOB by EPA 600/M4-82-020) by David W. Ralbovsky on 11/07/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 1.3% **Other Material:** Non-Asbestos 20%			
20231026-4166-305.1-1 305.1	123111018-27 **Location:** 12" x 12" Floor Tile - Brown Mottled; 914C	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 57%			
20231026-4166-305.1-2 305.1	123111018-28 **Location:** 12" x 12" Floor Tile - Brown Mottled; 914C	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 60%			
20231026-4166-305.2-1 305.2	123111018-29 **Location:** 12" x 12" Floor Tile - Brown Mottled Mastic; 914C	***Yes***	0.7% (NOB by EPA 600/M4-82-020) by David W. Ralbovsky on 11/07/23
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 0.7% **Other Material:** Non-Asbestos 28%			

See Reporting notes on last page

PLM Bulk Asbestos Report

4166; Kideney Architects / Yadira DeSantis; UB Renovate
Furnas Hall - Lab 514 & 913/914 215 Mary Talbert Way Buffalo, NY

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
20231026-4166-305.2-2 305.2 **Location:** 12" x 12" Floor Tile - Brown Mottled Mastic; 914C	123111018-30	***Yes***	0.6% (NOB by EPA 600/M4-82-020) by David W. Ralbovsky on 11/07/23
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 0.6% **Other Material:** Non-Asbestos 21%			
20231026-4166-600-1 600 **Location:** Cove Base Adhesive - Brown; 514	123111018-31	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Brown, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 45%			
20231026-4166-600-2 600 **Location:** Cove Base Adhesive - Brown; 914B	123111018-32	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Brown, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 47%			
20231026-4166-601-1 601 **Location:** Cove Base Adhesive - Beige; 514	123111018-33	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Beige, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 30%			
20231026-4166-601-2 601 **Location:** Cove Base Adhesive - Beige; 514	123111018-34	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Beige, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 25%			
20231026-4166-602-1 602 **Location:** Cove Base Adhesive - Yellow; 514	123111018-35	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Yellow, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 36%			

See Reporting notes on last page

PLM Bulk Asbestos Report

4166; Kideney Architects / Yadira DeSantis; UB Renovate
Furnas Hall - Lab 514 & 913/914 215 Mary Talbert Way Buffalo, NY

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
20231026-4166-602-2 602	123111018-36 **Location:** Cove Base Adhesive - Yellow; 514	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Yellow, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 32%			
20231026-4166-603-1 603	123111018-37 **Location:** Fiberglass Jacket Batt Tar - Black; 514C	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 17%			
20231026-4166-603-2 603	123111018-38 **Location:** Fiberglass Jacket Batt Tar - Black; 514B	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 10%			
20231026-4166-604-1 604	123111018-39 **Location:** Sink Undercoating - Black, Smooth; 914A	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 12%			
20231026-4166-604-2 604	123111018-40 **Location:** Sink Undercoating - Black, Smooth; 914A "Insufficient Material Submitted For Preparation"		NA
Analyst Description: Insufficient Material **Asbestos Types:** **Other Material:**			
20231026-4166-605-1 605	123111018-41 **Location:** Duct Seam Tape - White, Yellow; 514	***No***	NAD (by NYS ELAP 198.1) by David W. Ralbovsky on 11/07/23
Analyst Description: White/Gray, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 65%, Non-fibrous 35%			

See Reporting notes on last page

PLM Bulk Asbestos Report

4166; Kideney Architects / Yadira DeSantis; UB Renovate
Furnas Hall - Lab 514 & 913/914 215 Mary Talbert Way Buffalo, NY

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
20231026-4166-605-2 605 **Location:** Duct Seam Tape - White, Yellow; 910	123111018-42	***No***	NAD (by NYS ELAP 198.1) by David W. Ralbovsky on 11/07/23
Analyst Description: White/Gray, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 65%, Non-fibrous 35%			
20231026-4166-606-1 606 **Location:** Fire Caulk - Red; 914A	123111018-43	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Red, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 63%			
20231026-4166-606-2 606 **Location:** Fire Caulk - Red; 914A	123111018-44	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Red, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 23%			
20231026-4166-607-1 607 **Location:** Sink Undercoating - Black, Tar; 914	123111018-45	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 24%			
20231026-4166-607-2 607 **Location:** Sink Undercoating - Black, Tar; 914D	123111018-46	***No***	NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 11/07/23
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 27%			

See Reporting notes on last page

PLM Bulk Asbestos Report

4166; Kideney Architects / Yadira DeSantis; UB Renovate
Furnas Hall - Lab 514 & 913/914 215 Mary Talbert Way Buffalo, NY

Reporting Notes:

Analyzed by: David W. Ralbovsky
Date: 11/7/2023

Reviewed by: Cory M. Parnell

*NAD = no asbestos detected, Detection Limit <1%, Reporting Limits: CVES = 1%, 400 Pt Ct = 0.25%, 1000 Pt Ct = 0.1%; "Present" or NVA = "No Visible Asbestos" are observations made during a qualitative analysis; NA = not analyzed; NA/PS = not analyzed / positive stop; PLM Bulk Asbestos Analysis using Olympus, Model BH-2 microscope, Serial #229707, by EPA 600/R-93/116 per 40 CFR 763 (NVLAP Lab Code 101904-0) and ELAP PLM Analysis Protocol 198.1 for New York friable samples which includes quantitation of any vermiculite observed (198.6 for NOB samples) or EPA 400 pt ct by EPA 600/M4-82-020 (NYSDOH ELAP Lab # 10984); CA ELAP Lab # 2508; Note: PLM is not consistently reliable in detecting asbestos in floor coverings and similar NOB materials. NAD or Trace results by PLM are inconclusive, TEM is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos-containing in New York State (also see EPA Advisory for floor tile, FR 59, 146, 38970, 8/1/94). NIST 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.

Client Name: Sienna Environmental Technologies, LLC

Table I

Summary of Bulk Asbestos Analysis Results by NYS ELAP 198.4

4166; Kideney Architects / Yadira DeSantis; UB Renovate Furnas Hall - Lab 514 & 913/914 215 Mary Talbert Way Buffalo, NY

AmeriSci Sample #	Client Sample#	HG Area	NOB Sample Weight (gram)	NOB Heat Sensitive Organic %	NOB Acid Soluble Inorganic %	NOB Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01	20231026-4166-100.1-1	100.1	----	----	----	----	NAD	NA
Location: Gypsum Board; 516B								
02	20231026-4166-100.1-2	100.1	----	----	----	----	NAD	NA
Location: Gypsum Board; 516A								
03	20231026-4166-100.2-1	100.2	----	----	----	----	NAD	NA
Location: Joint Compound; 516B								
04	20231026-4166-100.2-2	100.2	----	----	----	----	NAD	NA
Location: Joint Compound; 516A								
05	20231026-4166-200-1	200	0.105	21.2	32.5	46.3	NAD	NAD
Location: 2' x 2' Ceiling Tile - Pinhole & Chip; 514								
06	20231026-4166-200-2	200	0.097	20.0	28.6	51.4	NAD	NAD
Location: 2' x 2' Ceiling Tile - Pinhole & Chip; 514B								
07	20231026-4166-300.1-1	300.1	0.188	62.6	8.5	28.9	NAD	NAD
Location: Carpet Mastic - Yellow; 514B								
08	20231026-4166-300.1-2	300.1	0.186	50.7	9.4	39.9	NAD	NAD
Location: Carpet Mastic - Yellow; 514B								
09	20231026-4166-300.2-1	300.2	0.478	17.6	67.9	14.1	Chrysotile 0.4	NA
Location: 12" x 12" Floor Tile - Black; 514B								
10	20231026-4166-300.2-2	300.2	0.817	17.5	21.6	59.4	Chrysotile 1.5	NA
Location: 12" x 12" Floor Tile - Black; 514B								
11	20231026-4166-300.3-1	300.3	0.543	19.9	39.1	39.2	Chrysotile 1.8	NA
Location: 12" x 12" Floor Tile - Black Mastic; 514B								
12	20231026-4166-300.3-2	300.3	0.201	62.2	24.2	13.5	NA/PS	NA
Location: 12" x 12" Floor Tile - Black Mastic; 514B								
13	20231026-4166-301.1-1	301.1	0.722	22.6	30.5	45.4	Chrysotile 1.5	NA
Location: 12" x 12" Floor Tile - Black; 913								
14	20231026-4166-301.1-2	301.1	0.824	23.0	21.3	55.6	NA/PS	NA
Location: 12" x 12" Floor Tile - Black; 914D								
15	20231026-4166-301.2-1	301.2	0.121	76.0	8.1	13.5	Chrysotile 2.4	NA
Location: 12" x 12" Floor Tile - Black Mastic; 913								
16	20231026-4166-301.2-2	301.2	0.222	58.7	22.3	19.0	NA/PS	NA
Location: 12" x 12" Floor Tile - Black Mastic; 914D								

See Reporting notes on last page

Table I

Summary of Bulk Asbestos Analysis Results by NYS ELAP 198.4

4166; Kideney Architects / Yadira DeSantis; UB Renovate Furnas Hall - Lab 514 & 913/914 215 Mary Talbert Way Buffalo, NY

AmeriSci Sample #	Client Sample#	HG Area	NOB Sample Weight (gram)	NOB Heat Sensitive Organic %	NOB Acid Soluble Inorganic %	NOB Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
17	20231026-4166-302.1-1	302.1	0.796	19.4	25.3	53.2	Chrysotile 2.1	NA
Location: 12" x 12" Floor Tile - Brown, Black Mottled; 913								
18	20231026-4166-302.1-2	302.1	0.892	17.5	44.8	37.6	NA/PS	NA
Location: 12" x 12" Floor Tile - Brown, Black Mottled; 914D								
19	20231026-4166-303.1-1	303.1	0.353	65.9	1.1	33.0	NAD	NAD
Location: Vinyl Flooring - Tan; 913C								
20	20231026-4166-303.1-2	303.1	0.591	65.9	2.3	31.8	NAD	NAD
Location: Vinyl Flooring - Tan; 913C								
21	20231026-4166-303.2-1	303.2	0.164	68.3	1.7	30.0	NAD	NAD
Location: Vinyl Flooring - Tan Mastic; 913C								
22	20231026-4166-303.2-2	303.2	0.235	69.0	3.1	27.9	NAD	NAD
Location: Vinyl Flooring - Tan Mastic; 913C								
23	20231026-4166-304.1-1	304.1	0.820	14.0	28.8	57.3	NAD	NAD
Location: 12" x 12" Floor Tile - Black Mottled; 914D								
24	20231026-4166-304.1-2	304.1	0.549	13.8	44.0	42.2	NAD	NAD
Location: 12" x 12" Floor Tile - Black Mottled; 914A								
25	20231026-4166-304.2-1	304.2	0.475	78.8	8.4	12.9	Chrysotile <0.3	NA
Location: 12" x 12" Floor Tile - Black Mottled Mastic; 914D								
26	20231026-4166-304.2-2	304.2	0.263	66.1	11.7	20.9	Chrysotile 1.3	NA
Location: 12" x 12" Floor Tile - Black Mottled Mastic; 914A								
27	20231026-4166-305.1-1	305.1	0.959	22.5	20.2	57.3	NAD	NAD
Location: 12" x 12" Floor Tile - Brown Mottled; 914C								
28	20231026-4166-305.1-2	305.1	0.920	23.8	15.9	60.3	NAD	NAD
Location: 12" x 12" Floor Tile - Brown Mottled; 914C								
29	20231026-4166-305.2-1	305.2	0.394	56.4	14.0	29.5	Chrysotile 0.7	Chrysotile Trace
Location: 12" x 12" Floor Tile - Brown Mottled Mastic; 914C								
30	20231026-4166-305.2-2	305.2	0.224	61.8	16.2	20.9	Chrysotile 0.6	Chrysotile 1.1
Location: 12" x 12" Floor Tile - Brown Mottled Mastic; 914C								
31	20231026-4166-600-1	600	0.406	49.2	4.9	45.9	NAD	NAD
Location: Cove Base Adhesive - Brown; 514								
32	20231026-4166-600-2	600	0.267	48.8	4.2	47.0	NAD	NAD
Location: Cove Base Adhesive - Brown; 914B								

See Reporting notes on last page

Table I

Summary of Bulk Asbestos Analysis Results by NYS ELAP 198.4

4166; Kideney Architects / Yadira DeSantis; UB Renovate Furnas Hall - Lab 514 & 913/914 215 Mary Talbert Way Buffalo, NY

AmeriSci Sample #	Client Sample#	HG Area	NOB Sample Weight (gram)	NOB Heat Sensitive Organic %	NOB Acid Soluble Inorganic %	NOB Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
33	20231026-4166-601-1	601	0.284	38.2	30.9	30.9	NAD	NAD
Location: Cove Base Adhesive - Beige; 514								
34	20231026-4166-601-2	601	0.267	39.5	35.5	25.0	NAD	NAD
Location: Cove Base Adhesive - Beige; 514								
35	20231026-4166-602-1	602	0.231	61.4	2.6	36.0	NAD	NAD
Location: Cove Base Adhesive - Yellow; 514								
36	20231026-4166-602-2	602	0.401	63.6	3.8	32.6	NAD	NAD
Location: Cove Base Adhesive - Yellow; 514								
37	20231026-4166-603-1	603	0.160	82.4	0.2	17.4	NAD	NAD
Location: Fiberglass Jacket Batt Tar - Black; 514C								
38	20231026-4166-603-2	603	0.179	88.3	1.1	10.7	NAD	NAD
Location: Fiberglass Jacket Batt Tar - Black; 514B								
39	20231026-4166-604-1	604	0.096	17.9	69.7	12.4	NAD	NAD
Location: Sink Undercoating - Black, Smooth; 914A								
40	20231026-4166-604-2	604	----	----	----	----	NA	NA
Location: Sink Undercoating - Black, Smooth; 914A "Insufficient Material Submitted For Preparation"								
41	20231026-4166-605-1	605	----	----	----	----	NAD	NA
Location: Duct Seam Tape - White, Yellow; 514								
42	20231026-4166-605-2	605	----	----	----	----	NAD	NA
Location: Duct Seam Tape - White, Yellow; 910								
43	20231026-4166-606-1	606	0.839	31.5	5.1	63.4	NAD	NAD
Location: Fire Caulk - Red; 914A								
44	20231026-4166-606-2	606	0.536	31.5	44.7	23.8	NAD	NAD
Location: Fire Caulk - Red; 914A								
45	20231026-4166-607-1	607	0.228	73.6	1.6	24.7	NAD	Chrysotile Trace
Location: Sink Undercoating - Black, Tar; 914								
46	20231026-4166-607-2	607	0.244	69.5	3.4	27.0	NAD	Chrysotile Trace
Location: Sink Undercoating - Black, Tar; 914D								

See Reporting notes on last page

Client Name: Sienna Environmental Technologies, LLC

Table I

Summary of Bulk Asbestos Analysis Results by NYS ELAP 198.4

4166; Kideney Architects / Yadira DeSantis; UB Renovate Furnas Hall - Lab 514 & 913/914 215 Mary Talbert Way Buffalo, NY

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

Analyzed by: Cory M. Parnell

Reviewed by: Cory M. Parnell

Date: 11/7/2023

Semi-Quantitative Analysis: NAD = no asbestos detected; NA = not analyzed; NA/PS = not analyzed due to positive stop; Trace = <1%; PLM analysis by EPA 600/R-93/116 per 40 CFR 763 (NVLAP Lab Code 101904-0) or NY ELAP 198.1 for New York friable samples which includes quantitation of any vermiculite observed (198.6 for NOB samples) or EPA 400 pt ct by EPA 600/M4-82-020 (NY ELAP Lab # 10984); TEM prep by EPA 600/R-93/116 Section 2.3 (analysis by Section 2.5, not covered by NVLAP Bulk accreditation); or NY ELAP 198.4 for New York NOB samples (NY ELAP Lab # 10984). Analysis using Jeol, Model JEM-100CX II microscope, Serial #156147-247. ** Warning Notes: Consider PLM fiber diameter limitation, only TEM will resolve fibers <0.25 micrometers in diameter. TEM bulk analysis is representative of the fine grained matrix material and may not be representative of non-uniformly dispersed debris, soils or other heterogeneous materials for which a combination PLM/TEM evaluation is recommended; Quantitation for beginning weights of <0.1 grams should be considered as qualitative only.

Bulk Chain of Custody

SIENNA ENVIRONMENTAL TECHNOLOGIES
350 Elmwood Ave. | Buffalo NY 14222 | 716.332.3134
83 Fall St. | Seneca Falls NY 13148 | 315.257.0270

Email Report to:	Labresults@SiennaET.com 12311 1018	**Turn Around Time**
		☐ RUSH
Client/Contact:	Kideney Architects	☐ 24 Hour
	Yadira DeSantis	☐ 48 Hour
Project/Location:	UB Renovate Furnas Hall - Lab 514 & 913/914	☑ 72 Hour
	215 Mary Talbert Way Buffalo, NY	☒ 5 Day
Project No.:	4166	Other:

Analysis Requested:			**Protocol:**	**Notes:**
PLM	☑	☑	Negative PLM to TEM per ELAP protocols	
TEM	☑	☑	Positive Stop by HAN-ID#	
PCB	☐	☐	Layered analysis requested for:	
Other:		**46**	Total # of Samples	

Sample Name					
Date	**Project**	**HAN**	**ID#**	**Description of Sample**	**Location of Sample**
20231026	4166	100.1	1	Gypsum Board	516B
20231026	4166	100.1	2	Gypsum Board	516A
20231026	4166	100.2	1	Joint Compound	516B
20231026	4166	100.2	2	Joint Compound	516A
20231026	4166	200	1	2' x 2' Ceiling Tile - Pinhole & Chip	514
20231026	4166	200	2	2' x 2' Ceiling Tile - Pinhole & Chip	514B
20231026	4166	300.1	1	Carpet Mastic - Yellow	514B
20231026	4166	300.1	2	Carpet Mastic - Yellow	514B
20231026	4166	300.2	1	12" x 12" Floor Tile - Black	514B
20231026	4166	300.2	2	12" x 12" Floor Tile - Black	514B
20231026	4166	300.3	1	12" x 12" Floor Tile - Black Mastic	514B
20231026	4166	300.3	2	12" x 12" Floor Tile - Black Mastic	514B
20231026	4166	301.1	1	12" x 12" Floor Tile - Black	913
20231026	4166	301.1	2	12" x 12" Floor Tile - Black	914D
20231026	4166	301.2	1	12" x 12" Floor Tile - Black Mastic	913
20231026	4166	301.2	2	12" x 12" Floor Tile - Black Mastic	914D
20231026	4166	302.1	1	12" x 12" Floor Tile - Brown, Black Mottled	913
20231026	4166	302.1	2	12" x 12" Floor Tile - Brown, Black Mottled	914D
20231026	4166	303.1	1	Vinyl Flooring - Tan	913C
20231026	4166	303.1	2	Vinyl Flooring - Tan	913C
20231026	4166	303.2	1	Vinyl Flooring - Tan Mastic	913C
20231026	4166	303.2	2	Vinyl Flooring - Tan Mastic	913C
20231026	4166	304.1	1	12" x 12" Floor Tile - Black Mottled	914D

Received
NOV 01 2023
10am

Sampled by: Daniel G. Korff — Date:10/26/2023
Relinquished by: — Date + Time:
Received by: — Date + Time:

Bulk Chain of Custody

123111018

SIENNA
ENVIRONMENTAL TECHNOLOGIES

350 Elmwood Ave. | Buffalo NY 14222 | 716.332.3134
83 Fall St. | Seneca Falls NY 13148 | 315.257.0270

20231026	4166	304.1	2	12" x 12" Floor Tile - Black Mottled	914A	
20231026	4166	304.2	1	12" x 12" Floor Tile - Black Mottled Mastic	914D	
20231026	4166	304.2	2	12" x 12" Floor Tile - Black Mottled Mastic	914A	
20231026	4166	305.1	1	12" x 12" Floor Tile - Brown Mottled	914C	
20231026	4166	305.1	2	12" x 12" Floor Tile - Brown Mottled	914C	
20231026	4166	305.2	1	12" x 12" Floor Tile - Brown Mottled Mastic	914C	
20231026	4166	305.2	2	12" x 12" Floor Tile - Brown Mottled Mastic	914C	
20231026	4166	600	1	Cove Base Adhesive - Brown		514
20231026	4166	600	2	Cove Base Adhesive - Brown	914B	
20231026	4166	601	1	Cove Base Adhesive - Beige		514
20231026	4166	601	2	Cove Base Adhesive - Beige		514
20231026	4166	602	1	Cove Base Adhesive - Yellow		514
20231026	4166	602	2	Cove Base Adhesive - Yellow		514
20231026	4166	603	1	Fiberglass Jacket Batt Tar - Black	514C	
20231026	4166	603	2	Fiberglass Jacket Batt Tar - Black	514B	
20231026	4166	604	1	Sink Undercoating - Black, Smooth	914A	
20231026	4166	604	2	Sink Undercoating - Black, Smooth	914A	
20231026	4166	605	1	Duct Seam Tape - White, Yellow		514
20231026	4166	605	2	Duct Seam Tape - White, Yellow		910
20231026	4166	606	1	Fire Caulk - Red	914A	
20231026	4166	606	2	Fire Caulk - Red	914A	
20231026	4166	607	1	Sink Undercoating - Black, Tar		914
20231026	4166	607	2	Sink Undercoating - Black, Tar	914D	
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			14			
			15			

Received
NOV 01 2023

Sampled by: Daniel G. Korff
Relinquished by:
Received by:

Date:10/26/2023
Date + Time:
Date + Time:

AmeriSci Richmond
13635 GENITO ROAD
MIDLOTHIAN, VIRGINIA 23112
TEL: (804) 763-1200 • FAX: (804) 763-1800

December 21, 2024

Encorus Group Engineering P.C.
Attn: Sean Fitzgerald
350 Elmwood Ave
Buffalo, NY 14222

RE: Encorus Group Engineering P.C.
Job Number 124121604
P.O. #24631
24631; Kideney Architects/Yadira D DeSantis AIA; Renovate UB Furnas Hall Labs/215 Maty Talbert Way Buffalo, NY 14222

Dear Sean Fitzgerald:

Enclosed are the results of Asbestos Analysis - Bulk Protocol of the following Encorus Group Engineering P.C. samples, received at AmeriSci on Wednesday, December 18, 2024, for a 3 day turnaround:

20241217-24631-202-1, 20241217-24631-202-2, 20241217-24631-306-1, 20241217-24631-306-2, 20241217-24631-608-1, 20241217-24631-608-2, 20241217-24631-609-1, 20241217-24631-609-2

The 8 samples, placed in zip lock bag, were shipped to AmeriSci via Fed Ex 7301 7895 0722. Encorus Group Engineering P.C. requested ELAP PLM/TEM analysis of these samples.

The results of the analyses which were performed under NYSDOH ELAP Lab Certification # 10984 following ELAP 198.4 TEM guidelines are presented within the Summary Table of this report. The presence of matrix reduction data in the Summary Table normally indicates an NOB sample. For NOB samples the individual matrix reduction and TEM analysis results are listed in Table I. Complete PLM results for individual samples analyzed by ELAP 198.1 (friable) and ELAP 198.6 (NOB) are presented in the PLM Bulk Asbestos Report. This combined report relates ONLY to sample analysis expressed as percent composition by weight and percent asbestos. This report must not be used to claim product endorsement or approval by these laboratories, NVLAP, ELAP or any other associated agency. The National Institute of Standards and Technology accreditation requirements, mandate that this report must not be reproduced, except in full without the written approval of the laboratory. This report may contain specific data not covered by NVLAP or ELAP accreditations respectively, if so identified in relevant footnotes.

AmeriSci appreciates this opportunity to serve your organization. Please contact us for any further assistance or with any questions.

Sincerely,

Beverly A. Schrage

Senior Analyst | Authorized Signatory

AmeriSci Richmond
13635 GENITO ROAD
MIDLOTHIAN, VIRGINIA 23112
TEL: (804) 763-1200 • FAX: (804) 763-1800

PLM Bulk Asbestos Report

Encorus Group Engineering P.C.
Attn: Sean Fitzgerald
350 Elmwood Ave

Buffalo, NY 14222

Date Received 12/18/2024 **AmeriSci Job #** 124121604
Date Examined 12/20/24 **P.O. #**
ELAP # 10984 **Page** 1 **of** 2

RE: 24631; Kideney Architects/Yadira D DeSantis AIA; Renovate UB Furnas Hall Labs/215 Maty Talbert Way Buffalo, NY 14222

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
20241217-24631-202-1 202 **Location:** 2'x4' Ceiling Tile - Dot & Fissure; C510 **Analyst Description:** Beige, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 43% **Comment:** Heat Sensitive (organic): 26.7%; Acid Soluble (inorganic): 29.9%; Inert (Non-asbestos): 43.4%	124121604-01	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by William M. Dunstan on 12/20/24	*1*
20241217-24631-202-2 202 **Location:** 2'x4' Ceiling Tile - Dot & Fissure; C510 **Analyst Description:** Beige, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 42% **Comment:** Heat Sensitive (organic): 26.6%; Acid Soluble (inorganic): 31.0%; Inert (Non-asbestos): 42.4%	124121604-02	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by William M. Dunstan on 12/20/24	*1*
20241217-24631-306-1 306 **Location:** Epoxy Floor Covering - Red; 916 **Analyst Description:** Red, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 84% **Comment:** Heat Sensitive (organic): 11.4%; Acid Soluble (inorganic): 3.9%; Inert (Non-asbestos): 84.8%	124121604-03	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by William M. Dunstan on 12/20/24	*1*
20241217-24631-306-2 306 **Location:** Epoxy Floor Covering - Red; 916 **Analyst Description:** Red, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 79% **Comment:** Heat Sensitive (organic): 11.6%; Acid Soluble (inorganic): 9.1%; Inert (Non-asbestos): 79.3%	124121604-04	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by William M. Dunstan on 12/20/24	*1*
20241217-24631-608-1 608 **Location:** Cement Board Paneling Associated w/Fume Hood; 914D **Analyst Description:** Gray, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** Chrysotile 21% **Other Material:** Non-fibrous 79%	124121604-05	***Yes***	21% (by NYS ELAP 198.1) by William M. Dunstan on 12/20/24	

See Reporting notes on last page

PLM Bulk Asbestos Report

24631; Kideney Architects/Yadira D DeSantis AIA; Renovate UB
Furnas Hall Labs/215 Maty Talbert Way Buffalo, NY 14222

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
20241217-24631-608-2 608	124121604-06		NA/PS	
Location: Cement Board Paneling Associated w/Fume Hood; 916 **Analyst Description:** Bulk Material **Asbestos Types:** **Other Material:**				
20241217-24631-609-1 609	124121604-07	***Yes***	Inconclusive - Trace Chrysotile detected at 1% or less (NOB by EPA 600/M4-82-020) by William M. Dunstan on 12/20/24	2
Location: Concrete Pillar Joint Sealant - Grey; 521 **Analyst Description:** Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile <0.3 % pc **Other Material:** Non-fibrous 12% **Comment:** Heat Sensitive (organic): 45.1%; Acid Soluble (inorganic): 42.0%; Inert (Non-asbestos): 12.9%				
20241217-24631-609-2 609	124121604-08	***Yes***	Inconclusive - Trace Chrysotile detected at 1% or less (NOB by EPA 600/M4-82-020) by William M. Dunstan on 12/20/24	2
Location: Concrete Pillar Joint Sealant - Grey; 521 **Analyst Description:** Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile <0.3 % pc **Other Material:** Non-fibrous 16% **Comment:** Heat Sensitive (organic): 44.2%; Acid Soluble (inorganic): 39.5%; Inert (Non-asbestos): 16.3%				

Reporting Notes:

(1) NAD results by NYS 198.6 are inconclusive and are not considered non-ACM

(2) Trace <1% results by NYS 198.6 are inconclusive and are not considered non-ACM

Analyzed by: William M. Dunstan
Date: 12/20/2024

Reviewed by: Beverly A. Schrage

*NAD = no asbestos detected, Detection Limit <1%, Reporting Limits: CVES = 1%, 400 Pt Ct = 0.25%, 1000 Pt Ct = 0.1%; "Present" or NVA = "No Visible Asbestos" are observations made during a qualitative analysis; NA = not analyzed; NA/PS = not analyzed / positive stop; PLM Bulk Asbestos Analysis using Olympus, Model BH-2 microscope, Serial #233533, by EPA 600/R-93/116 per 40 CFR 763 (NVLAP Lab Code 101904-0) and ELAP PLM Analysis Protocol 198.1 for New York friable samples which includes quantitation of any vermiculite observed (198.6 for NOB samples) or EPA 400 pt ct by EPA 600/M4-82-020 (NYSDOH ELAP Lab # 10984); CA ELAP Lab # 2508; Note: PLM is not consistently reliable in detecting asbestos in floor coverings and similar NOB materials. NAD or Trace results by PLM are inconclusive, TEM is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos-containing in New York State (also see EPA Advisory for floor tile, FR 59, 146, 38970, 8/1/94). NIST 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.

Client Name: Encorus Group Engineering P.C.

Table I

Summary of Bulk Asbestos Analysis Results by NYS ELAP 198.4

24631; Kideney Architects/Yadira D DeSantis AIA; Renovate UB Furnas Hall Labs/215 Maty Talbert Way Buffalo, NY 14222

AmeriSci Sample #	Client Sample#	HG Area	NOB Sample Weight (gram)	NOB Heat Sensitive Organic %	NOB Acid Soluble Inorganic %	NOB Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01	20241217-24631-202-1	202	0.098	26.7	29.9	43.4	NAD	NAD
Location:	2'x4' Ceiling Tile - Dot & Fissure; C510							
02	20241217-24631-202-2	202	0.115	26.6	31.0	42.4	NAD	NAD
Location:	2'x4' Ceiling Tile - Dot & Fissure; C510							
03	20241217-24631-306-1	306	0.737	11.4	3.9	84.8	NAD	NAD
Location:	Epoxy Floor Covering - Red; 916							
04	20241217-24631-306-2	306	0.716	11.6	9.1	79.3	NAD	NAD
Location:	Epoxy Floor Covering - Red; 916							
05	20241217-24631-608-1	608	----	----	----	----	Chrysotile 21	NA
Location:	Cement Board Paneling Associated w/Fume Hood; 914D							
06	20241217-24631-608-2	608	----	----	----	----	NA/PS	NA
Location:	Cement Board Paneling Associated w/Fume Hood; 916							
07	20241217-24631-609-1	609	0.868	45.1	42.0	12.8	Chrysotile <0.3	Chrysotile Trace
Location:	Concrete Pillar Joint Sealant - Grey; 521							
08	20241217-24631-609-2	609	0.567	44.2	39.5	16.2	Chrysotile <0.3	Chrysotile Trace
Location:	Concrete Pillar Joint Sealant - Grey; 521							

Analyzed by: Beverly A. Schrage Reviewed by: Beverly A. Schrage

Date: 12/21/2024

Semi-Quantitative Analysis: NAD = no asbestos detected; NA = not analyzed; NA/PS = not analyzed due to positive stop; Trace = <1%; PLM analysis by EPA 600/R-93/116 per 40 CFR 763 (NVLAP Lab Code 101904-0) or NY ELAP 198.1 for New York friable samples which includes quantitation of any vermiculite observed (198.6 for NOB samples) or EPA 400 pt ct by EPA 600/M4-82-020 (NY ELAP Lab # 10984); TEM prep by EPA 600/R-93/116 Section 2.3 (analysis by Section 2.5, not covered by NVLAP Bulk accreditation); or NY ELAP 198.4 for New York NOB samples (NY ELAP Lab # 10984). Analysis using Jeol, Model JEM-100CX II microscope, Serial #156147-247. ** Warning Notes: Consider PLM fiber diameter limitation, only TEM will resolve fibers <0.25 micrometers in diameter. TEM bulk analysis is representative of the fine grained matrix material and may not be representative of non-uniformly dispersed debris, soils or other heterogeneous materials for which a combination PLM/TEM evaluation is recommended; Quantitation for beginning weights of <0.1 grams should be considered as qualitative only.

ENCORUS GROUP

1241216 04

23 Mechanic Street, Springville, NY 14141 | 295 Main Street, West Seneca, NY 14224 | encorus.com 716.592.3980

Bulk Chain of Custody

Email Report to:	labresults@encorus.com	**Turn Around Time**
		☐ RUSH
Client/Contact:	Kideney Architects	☐ 24 Hour
	Yadira D. DeSantis. AIA	☐ 48 Hour
Project/Location:	Renovate UB Furnas Hall Labs	☑ 72 Hour
	215 Mary Talbert Way Buffalo, NY 14222	☐ 5 Day
Project No.:	24631	Other:

Analysis Requested:		**Protocol:**		**Notes:**
PLM	☑	☑	Negative PLM to TEM per ELAP protocols	
TEM	☑	☑	Positive Stop by HAN-ID#	
PCB	☐	☐	Layered analysis requested for:	
Other:		8	Total # of Samples	

Sample Name: Date	Project	HAN	ID#	Description of Sample	Location of Sample
20241217	24631	202	1	2' x 4' Ceiling Tile - Dot & Fissure	C510
20241217	24631	202	2	2' x 4' Ceiling Tile - Dot & Fissure	C510
20241217	24631	306	1	Epoxy Floor Covering - Red	916
20241217	24631	306	2	Epoxy Floor Covering - Red	916
20241217	24631	608	1	Cement Board Paneling Associated w/ Fume Hood	914D
20241217	24631	608	2	Cement Board Paneling Associated w/ Fume Hood	916
20241217	24631	609	1	Concrete Pillar Joint Sealant - Grey	521
20241217	24631	609	2	Concrete Pillar Joint Sealant - Grey	521

RECEIVED
DEC 18 2024

Sampled by: Daniel G. Korff — Date: 12/17/2024
Relinquished by: Daniel G. Korff — Date + Time: 12/17/2024 1630
Received by: — Date + Time:

AmeriSci Richmond
13635 GENITO ROAD
MIDLOTHIAN, VIRGINIA 23112
TEL: (804) 763-1200 • FAX: (804) 763-0493

March 27, 2025

Encorus Group Engineering P.C.
Attn: Sean Fitzgerald
295 Main Street
West Seneca, NY 14141

RE: Encorus Group Engineering P.C.
Job Number 125031886
P.O. #24631
24631; Kideney Architects/Yadira D DeSantis AIA; Renovate UB Furnas Hall Labs; 215 Mary Talbert Way, Buffalo, NY 14222

Dear Sean Fitzgerald:

Enclosed are the results of Asbestos Analysis - Bulk Protocol of the following Encorus Group Engineering P.C. samples, received at AmeriSci on Monday, March 24, 2025, for a 3 day turnaround:

20250321-24631-101.1-1, 20250321-24631-101.1-2, 20250321-24631-101.2-1, 20250321-24631-101.2-2, 20250321-24631-611.1-1, 20250321-24631-611.1-2, 20250321-24631-611.2-1, 20250321-24631-611.2-2, 20250321-24631-612-1, 20250321-24631-612-2, 20250321-24631-613-1, 20250321-24631-613-2, 20250321-24631-614-1, 20250321-24631-614-2

The 14 samples, placed in zip lock bag, were shipped to AmeriSci via Fed Ex. Encorus Group Engineering P.C. requested ELAP PLM/TEM analysis of these samples.

The results of the analyses which were performed under NYSDOH ELAP Lab Certification # 10984 following ELAP 198.4 TEM guidelines are presented within the Summary Table of this report. The presence of matrix reduction data in the Summary Table normally indicates an NOB sample. For NOB samples the individual matrix reduction and TEM analysis results are listed in Table I. Complete PLM results for individual samples analyzed by ELAP 198.1 (friable) and ELAP 198.6 (NOB) are presented in the PLM Bulk Asbestos Report. This combined report relates ONLY to sample analysis expressed as percent composition by weight and percent asbestos. This report must not be used to claim product endorsement or approval by these laboratories, NVLAP, ELAP or any other associated agency. The National Institute of Standards and Technology accreditation requirements, mandate that this report must not be reproduced, except in full without the written approval of the laboratory. This report may contain specific data not covered by NVLAP or ELAP accreditations respectively, if so identified in relevant footnotes.

AmeriSci appreciates this opportunity to serve your organization. Please contact us for any further assistance or with any questions.

Sincerely,

Cory M. Parnell

Laboratory Director | Authorized Signatory

AmeriSci Richmond
13635 GENITO ROAD
MIDLOTHIAN, VIRGINIA 23112
TEL: (804) 763-1200 • FAX: (804) 763-0493

PLM Bulk Asbestos Report

Encorus Group Engineering P.C.
Attn: Sean Fitzgerald
295 Main Street

West Seneca, NY 14141

Date Received 3/24/2025 **AmeriSci Job #** 125031886
Date Examined 03/27/25 **P.O. #**
ELAP # 10984 **Page** 1 **of** 3

RE: 24631; Kideney Architects/Yadira D DeSantis AIA; Renovate UB Furnas Hall Labs; 215 Mary Talbert Way, Buffalo, NY 14222

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
20250321-24631-101.1-1 101.1 **Location:** Gypsum Board - Mechanical Room; 703 **Analyst Description:** Brown/Lt.Gray, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 7.0%, Non-fibrous 93%	125031886-01	***No***	NAD (by NYS ELAP 198.1) by David W. Ralbovsky on 03/27/25	
20250321-24631-101.1-2 101.1 **Location:** Gypsum Board - Mechanical Room; 703 **Analyst Description:** Brown/Lt.Gray, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 7.0%, Non-fibrous 93%	125031886-02	***No***	NAD (by NYS ELAP 198.1) by David W. Ralbovsky on 03/27/25	
20250321-24631-101.2-1 101.2 **Location:** Joint Compound - Mechanical Room; 703 **Analyst Description:** White, Heterogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Fibrous glass Trace, Non-fibrous 100%	125031886-03	***No***	NAD (by NYS ELAP 198.1) by David W. Ralbovsky on 03/27/25	
20250321-24631-101.2-2 101.2 **Location:** Joint Compound - Mechanical Room; 703 **Analyst Description:** White, Heterogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%	125031886-04	***No***	NAD (by NYS ELAP 198.1) by David W. Ralbovsky on 03/27/25	
20250321-24631-611.1-1 611.1 **Location:** Lab Bench Tabletop Slab - Black; 914B **Analyst Description:** Black, Heterogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%	125031886-05	***No***	NAD (by NYS ELAP 198.1) by David W. Ralbovsky on 03/27/25	
20250321-24631-611.1-2 611.1 **Location:** Lab Bench Tabletop Slab - Black; 916 **Analyst Description:** Black, Heterogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%	125031886-06	***No***	NAD (by NYS ELAP 198.1) by David W. Ralbovsky on 03/27/25	

See Reporting notes on last page

PLM Bulk Asbestos Report

24631; Kideney Architects/Yadira D DeSantis AIA; Renovate UB
Furnas Hall Labs; 215 Mary Talbert Way, Buffalo, NY 14222

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
20250321-24631-611.2-1 611.2	125031886-07	***No***	NAD (by NYS ELAP 198.1) by David W. Ralbovsky on 03/27/25	
Location: Lab Bench Tabletop Grout - Grey; 914B **Analyst Description:** Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%				
20250321-24631-611.2-2 611.2	125031886-08	***No***	NAD (by NYS ELAP 198.1) by David W. Ralbovsky on 03/27/25	
Location: Lab Bench Tabletop Grout - Grey; 916 **Analyst Description:** Gray, Heterogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%				
20250321-24631-612-1 612	125031886-09	***No***	NAD (by NYS ELAP 198.1) by David W. Ralbovsky on 03/27/25	
Location: Formed Concrete Duct Insulation - Red; 419 **Analyst Description:** Reddish-Brown-Black, Heterogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%				
20250321-24631-612-2 612	125031886-10	***No***	NAD (by NYS ELAP 198.1) by David W. Ralbovsky on 03/27/25	
Location: Formed Concrete Duct Insulation - Red; 419 **Analyst Description:** Reddish-Brown-Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%				
20250321-24631-613-1 613	125031886-11	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 03/27/25	*1*
Location: Bituminous HVAC Seam Gasket Putty - Black; 703 **Analyst Description:** Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 34% **Comment:** Heat Sensitive (organic): 56.8%; Acid Soluble (inorganic): 9.2%; Inert (Non-asbestos): 34.0%				
20250321-24631-613-2 613	125031886-12	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 03/27/25	*1*
Location: Bituminous HVAC Seam Gasket Putty - Black; 703 **Analyst Description:** Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-Asbestos 34% **Comment:** Heat Sensitive (organic): 58.9%; Acid Soluble (inorganic): 7.1%; Inert (Non-asbestos): 34.0%				

See Reporting notes on last page

PLM Bulk Asbestos Report

24631; Kideney Architects/Yadira D DeSantis AIA; Renovate UB
Furnas Hall Labs; 215 Mary Talbert Way, Buffalo, NY 14222

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
20250321-24631-614-1 614	125031886-13	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 03/27/25	*1*

Location: Duct Seam Tape - Old; 703
Analyst Description: Orange, Heterogeneous, Non-Fibrous, Bulk Material
Asbestos Types:
Other Material: Non-Asbestos 29%
Comment: Heat Sensitive (organic): 52.8%; Acid Soluble (inorganic): 17.8%; Inert (Non-asbestos): 29.4%

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
20250321-24631-614-2 614	125031886-14	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by David W. Ralbovsky on 03/27/25	*1*

Location: Duct Seam Tape - Old; 703
Analyst Description: Orange, Heterogeneous, Non-Fibrous, Bulk Material
Asbestos Types:
Other Material: Non-Asbestos 45%
Comment: Heat Sensitive (organic): 35.2%; Acid Soluble (inorganic): 19.8%; Inert (Non-asbestos): 45.0%

Reporting Notes:

(1) NAD results by NYS 198.6 are inconclusive and are not considered non-ACM

Analyzed by: David W. Ralbovsky
Date: 3/27/2025

Reviewed by: Cory M. Parnell

*NAD = no asbestos detected, Detection Limit <1%, Reporting Limits: CVES = 1%, 400 Pt Ct = 0.25%, 1000 Pt Ct = 0.1%; "Present" or NVA = "No Visible Asbestos" are observations made during a qualitative analysis (Not covered by NVLAP or NY ELAP accreditations); NA = not analyzed; NA/PS = not analyzed / positive stop; PLM Bulk Asbestos Analysis using Olympus, Model BH-2 microscope, Serial #229707, by EPA 600/R-93/116 per 40 CFR 763 (NVLAP Lab Code 101904-0) and ELAP PLM Analysis Protocol 198.1 for New York friable samples which includes quantitation of any vermiculite observed (198.6 for NOB samples) or EPA 400 pt ct by EPA 600/M4-82-020 (NYSDOH ELAP Lab # 10984); CA ELAP Lab # 2508; Note: PLM is not consistently reliable in detecting asbestos in floor coverings and similar NOB materials. NAD or Trace results by PLM are inconclusive, TEM is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos-containing in New York State (also see EPA Advisory for floor tile, FR 59, 146, 38970, 8/1/94). NIST 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.

Client Name: Encorus Group Engineering P.C.

Table I

Summary of Bulk Asbestos Analysis Results by NYS ELAP 198.4

24631; Kideney Architects/Yadira D DeSantis AIA; Renovate UB Furnas Hall Labs; 215 Mary Talbert Way, Buffalo, NY 14222

AmeriSci Sample #	Client Sample#	HG Area	NOB Sample Weight (gram)	NOB Heat Sensitive Organic %	NOB Acid Soluble Inorganic %	NOB Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01	20250321-24631-101.1-1	101.1	----	----	----	----	NAD	NA
Location: Gypsum Board - Mechanical Room; 703								
02	20250321-24631-101.1-2	101.1	----	----	----	----	NAD	NA
Location: Gypsum Board - Mechanical Room; 703								
03	20250321-24631-101.2-1	101.2	----	----	----	----	NAD	NA
Location: Joint Compound - Mechanical Room; 703								
04	20250321-24631-101.2-2	101.2	----	----	----	----	NAD	NA
Location: Joint Compound - Mechanical Room; 703								
05	20250321-24631-611.1-1	611.1	----	----	----	----	NAD	NA
Location: Lab Bench Tabletop Slab - Black; 914B								
06	20250321-24631-611.1-2	611.1	----	----	----	----	NAD	NA
Location: Lab Bench Tabletop Slab - Black; 916								
07	20250321-24631-611.2-1	611.2	----	----	----	----	NAD	NA
Location: Lab Bench Tabletop Grout - Grey; 914B								
08	20250321-24631-611.2-2	611.2	----	----	----	----	NAD	NA
Location: Lab Bench Tabletop Grout - Grey; 916								
09	20250321-24631-612-1	612	----	----	----	----	NAD	NA
Location: Formed Concrete Duct Insulation - Red; 419								
10	20250321-24631-612-2	612	----	----	----	----	NAD	NA
Location: Formed Concrete Duct Insulation - Red; 419								
11	20250321-24631-613-1	613	0.611	56.8	9.2	34.0	NAD	NAD
Location: Bituminous HVAC Seam Gasket Putty - Black; 703								
12	20250321-24631-613-2	613	0.423	58.9	7.1	34.0	NAD	NAD
Location: Bituminous HVAC Seam Gasket Putty - Black; 703								
13	20250321-24631-614-1	614	0.261	52.8	17.8	29.4	NAD	NAD
Location: Duct Seam Tape - Old; 703								
14	20250321-24631-614-2	614	0.456	35.2	19.8	45.0	NAD	NAD
Location: Duct Seam Tape - Old; 703								

See Reporting notes on last page

Client Name: Encorus Group Engineering P.C.

Table I
Summary of Bulk Asbestos Analysis Results by NYS ELAP 198.4

24631; Kideney Architects/Yadira D DeSantis AIA; Renovate UB Furnas Hall Labs; 215 Mary Talbert Way, Buffalo, NY 14222

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

Analyzed by: Cory M. Parnell

Reviewed by: Cory M. Parnell

Date: 3/27/2025

Semi-Quantitative Analysis: NAD = no asbestos detected; NA = not analyzed; NA/PS = not analyzed due to positive stop; Trace = <1%; PLM analysis by EPA 600/R-93/116 per 40 CFR 763 (NVLAP Lab Code 101904-0) or NY ELAP 198.1 for New York friable samples which includes quantitation of any vermiculite observed (198.6 for NOB samples) or EPA 400 pt ct by EPA 600/M4-82-020 (NY ELAP Lab # 10984); TEM prep by EPA 600/R-93/116 Section 2.3 (analysis by Section 2.5, not covered by NVLAP Bulk accreditation); or NY ELAP 198.4 for New York NOB samples (NY ELAP Lab # 10984). Analysis using Jeol, Model JEM-100CX II microscope, Serial #156147-247. ** Warning Notes: Consider PLM fiber diameter limitation, only TEM will resolve fibers <0.25 micrometers in diameter. TEM bulk analysis is representative of the fine grained matrix material and may not be representative of non-uniformly dispersed debris, soils or other heterogeneous materials for which a combination PLM/TEM evaluation is recommended; Quantitation for beginning weights of <0.1 grams should be considered as qualitative only.

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Bulk Chain of Custody 125031886

Email Report to:	labresults@encorus.com	**Turn Around Time**
		☐ RUSH
Client/Contact:	Kideney Architects	☐ 24 Hour
	Yadira D. DeSantis. AIA	☐ 48 Hour
Project/Location:	Renovate UB Furnas Hall Labs	☑ 72 Hour
	215 Mary Talbert Way Buffalo, NY 14222	☐ 5 Day
Project No.:	24631	Other:

Analysis Requested:			**Protocol:**	**Notes:**
PLM	☑	☑	Negative PLM to TEM per ELAP protocols	
TEM	☑	☑	Positive Stop by HAN-ID#	
PCB	☐	☐	Layered analysis requested for:	
Other:		14	Total # of Samples	

Sample Name					
Date	**Project**	**HAN**	**ID#**	**Description of Sample**	**Location of Sample**
20250321	24631	101.1	1	Gypsum Board - Mechanical Room	703
20250321	24631	101.1	2	Gypsum Board - Mechanical Room	703
20250321	24631	101.2	1	Joint Compound - Mechanical Room	703
20250321	24631	101.2	2	Joint Compound - Mechanical Room	703
20250321	24631	611.1	1	Lab Bench Tabletop Slab - Black	914B
20250321	24631	611.1	2	Lab Bench Tabletop Slab - Black	916
20250321	24631	611.2	1	Lab Bench Tabletop Grout - Grey	914B
20250321	24631	611.2	2	Lab Bench Tabletop Grout - Grey	916
20250321	24631	612	1	Formed Concrete Duct Insulation - Red	419
20250321	24631	612	2	Formed Concrete Duct Insulation - Red	419
20250321	24631	613	1	Bituminous HVAC Seam Gasket Putty - Black	703
20250321	24631	613	2	Bituminous HVAC Seam Gasket Putty - Black	703
20250321	24631	614	1	Duct Seam Tape - OLD	703
20250321	24631	614	2	Duct Seam Tape - OLD	703
					Received

Sampled by: Daniel G. Korff
Relinquished by: Daniel G. Korff
Received by:

Date: 03/21/2025
Date + Time: 03/21/2025 1630
Date + Time:

MAR 24 2025

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Appendix D

XRF Spectrum Analyzer Report and Instrument Information

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LEAD PAINT INSPECTION REPORT

Kideney Architects
CLIENT

Furnas Hall 5th Floor and 9th Floor
INSPECTION LOCATION

October 25, 2023
INSPECTION DATE(s)

Viken Detection Pb200i
XRF INSTRUMENT TYPE

2372
XRF INSTRUMENT SERIAL NUMBER

1.0 mg/cm^2
ACTION LEVEL

SIGNED: Daniel G. Korff

DATE: 11/09/23

Company Heuresis Corp.
Model Pb200i
Type XRF Lead Paint Analyzer
Serial Num 2372
App Versio Pb200i-4.1-11

Reading #	Concentration	Units	Room/Space#	Color	Substrate	Component	-->Member	Wall	Condition	Floor
113	1	mg/cm2		Green	Wood	Calibration		-	Intact	
114	1.1	mg/cm2		Green	Wood	Calibration		-	Intact	
115	1.2	mg/cm2		Green	Wood	Calibration		-	Intact	
116	0	mg/cm2	514	Black	Metal	Door	Outer Casing	A	Intact	Fifth Floor
117	0.1	mg/cm2	514	White	Concrete	Room	Wall	A	Intact	Fifth Floor
118	0.6	mg/cm2	514	White	Metal	Door	Frame	B	Intact	Fifth Floor
119	0.1	mg/cm2	514	Grey	Metal	Door	Frame	B	Intact	Fifth Floor
120	0.2	mg/cm2	514	Black	Metal	Pipe	Horizontal	-	Intact	Fifth Floor
121	0.1	mg/cm2	514	Black	Metal	Pipe	Horizontal	-	Intact	Fifth Floor
122	0.1	mg/cm2	516	Grey	Metal	Door	Outer Casing	A	Intact	Fifth Floor
123	-0.2	mg/cm2	516	White	Concrete	Room	Wall	A	Intact	Fifth Floor
124	0.3	mg/cm2	516	Black	Metal	Door	Outer Casing	C	Intact	Fifth Floor
125	0.2	mg/cm2	516a	White	Metal	Door	Outer Casing	A	Intact	Fifth Floor
126	0	mg/cm2	516b	White	Gypsum	Room	Wall	C	Intact	Fifth Floor
127	1.2	mg/cm2	516	Red	Metal	Cabinets	Door	C	Intact	Fifth Floor
128	0.1	mg/cm2	516	Grey	Metal	Cabinets	Frame	C	Intact	Fifth Floor
129	0.1	mg/cm2	516	White	Metal	HVAC	Vent Casing	-	Intact	Fifth Floor
130	0.1	mg/cm2	910	Black	Metal	Pipe	Horizontal	-	Intact	Ninth Floor
131	0.1	mg/cm2	910	Black	Metal	Door	Outer Casing	C	Intact	Ninth Floor
132	0.1	mg/cm2	910	Black	Metal	Cabinets	Door		Intact	Ninth Floor
133	-0.2	mg/cm2	910	White	Concrete	Room	Wall	C	Intact	Ninth Floor
134	0.1	mg/cm2	910	White	Metal	Pipe	Vertical	C	Intact	Ninth Floor
135	-0.3	mg/cm2	910	Black	Metal	Window	Frame	A	Intact	Ninth Floor
136	0.1	mg/cm2	910	Black	Metal	Fume Hood		C	Intact	Ninth Floor
137	0.2	mg/cm2	910	White	Gypsum	Room	Wall	A	Intact	Ninth Floor
138	0.3	mg/cm2	910	Beige	Metal	Radiator	Cover	A	Intact	Ninth Floor
140	0.2	mg/cm2	913	Black	Metal	Cabinets	Door		Intact	Ninth Floor
141	0	mg/cm2	913	Black	Metal	Cabinets	Door		Intact	Ninth Floor
142	0.1	mg/cm2	913	Black	Metal	Cabinets	Door		Intact	Ninth Floor
143	0.1	mg/cm2	913	Black	Metal	Cabinets	Door		Intact	Ninth Floor
144	0.1	mg/cm2	913	Black	Metal	Door	Outer Casing	A	Intact	Ninth Floor
145	0	mg/cm2	913	Tan	Metal	Fridge		A	Intact	Ninth Floor
146	-0.1	mg/cm2	913c	White	Metal	Door	Outer Casing	B	Intact	Ninth Floor
147	-0.1	mg/cm2	913d	White	Concrete	Room	Wall	A	Intact	Ninth Floor
148	1.2	mg/cm2		Green	Wood	Calibration			Intact	
149	1.1	mg/cm2		Green	Wood	Calibration			Intact	
150	1.2	mg/cm2		Green	Wood	Calibration			Intact	
151	0.3	mg/cm2	913d	White	Gypsum	Room	Wall	B	Intact	Ninth Floor
152	0.2	mg/cm2	913d	Beige	Metal	Door	Frame	B	Intact	Ninth Floor
153	0.1	mg/cm2	914a	White	Concrete	Room	Wall	D	Intact	Ninth Floor
154	0.2	mg/cm2	914a	Black	Metal	Cabinets	Door	A	Intact	Ninth Floor
155	0.1	mg/cm2	914a	Black	Metal	Door	Outer Casing	D	Intact	Ninth Floor
156	0.4	mg/cm2	914a	Beige	Metal	Door	Frame	D	Intact	Ninth Floor
157	0.1	mg/cm2	914	Black	Metal	Cabinets	Door		Intact	Ninth Floor
158	0	mg/cm2	914	White	Concrete	Room	Wall	A	Intact	Ninth Floor
159	0.1	mg/cm2	914	Tan	Metal	Fridge		D	Intact	Ninth Floor
160	0.2	mg/cm2	914	White	Metal	HVAC	Vent Casing	-	Damaged	Ninth Floor
161	0	mg/cm2	914	White	Metal	Pipe	Vertical	C	Damaged	Ninth Floor
162	0.2	mg/cm2	914d	Beige	Metal	Fume Hood		D	Intact	Ninth Floor
163	0	mg/cm2	914d	Black	Metal	Fume Hood		C	Intact	Ninth Floor
164	0.5	mg/cm2	914d	Black	Metal	Cabinets	Door	C	Intact	Ninth Floor
165	0.1	mg/cm2	914d	Black	Metal	Door	Outer Casing	B	Intact	Ninth Floor
166	0.6	mg/cm2	914d	Beige	Metal	Door	Frame	B	Intact	Ninth Floor

167	0 mg/cm2	914c	Black	Metal	Cabinets	Door	B	Intact	Ninth Floor
168	0 mg/cm2	914c	White	Concrete	Room	Wall	A	Intact	Ninth Floor
169	-0.1 mg/cm2	914b	White	Concrete	Room	Wall	D	Intact	Ninth Floor
170	0.1 mg/cm2	914b	Black	Metal	Cabinets	Door	C	Intact	Ninth Floor
171	1 mg/cm2		Green	Wood	Calibration			Intact	
172	1 mg/cm2		Green	Wood	Calibration			Intact	
173	1 mg/cm2		Green	Wood	Calibration			Intact	

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Appendix E

Sample Floor Plans

DRAWING NOTES:

A. VERIFY ALL INVERTS, PIPING ROUTES PRIOR TO INSTALLATION. PROVIDE ALL NECESSARY OFFSETS AND FITTINGS REQUIRED TO MAKE SYSTEMS OPERATIONAL.

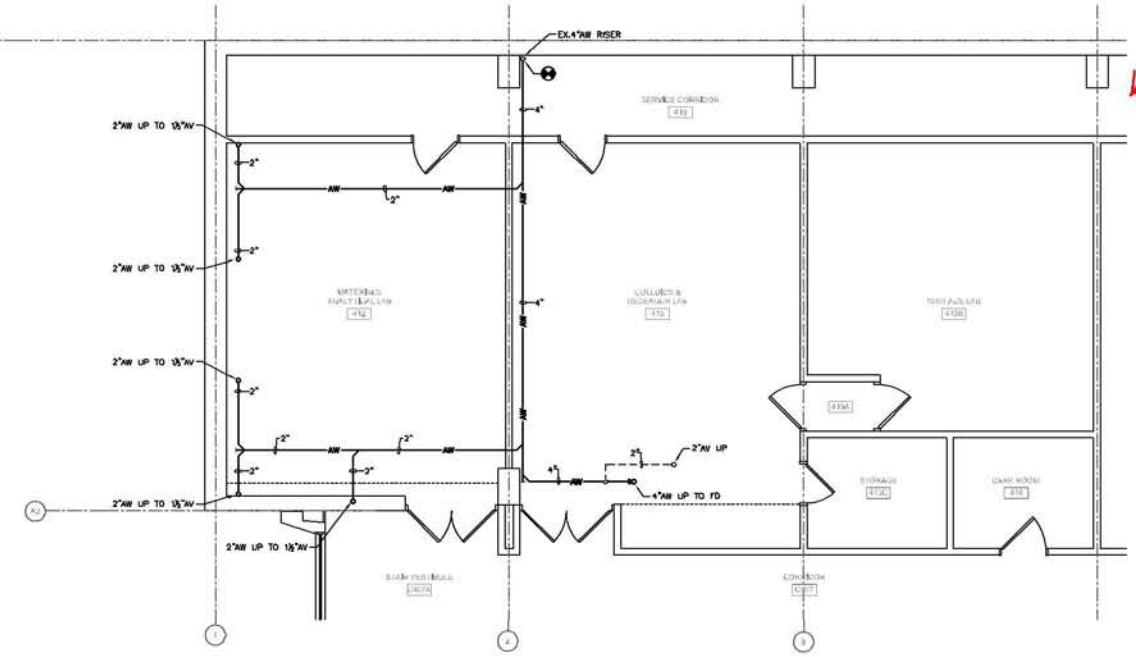
B. PROVIDE ALL CUTTING, PATCHING, AND FIRESTOPPING REQUIRED TO ACCOMPLISH WORK SHOWN. PATCH OPENINGS TO MATCH ADJACENT WALLS, FLOORS, AND CEILINGS.

C. PROVIDE ALL SLEEVES, CORE DRILLING, WATER, SMOKE AND FIRE SEALING OF PIPING PENETRATIONS THROUGH WALLS AND FLOORS.

D. COORDINATE THE INSTALLATION OF ALL PLUMBING PIPING SLEEVE LOCATIONS INSTALLED THRU OR WITHIN CONCRETE FLOORS OR BLOCK WALLS WITH THE GENERAL CONSTRUCTION TRADE.

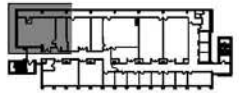
RAM-TECH Engineers of Syracuse, P.C.

612 - 1, 2



PARTIAL ENLARGED FOURTH FLOOR PLAN - PLUMBING

SCALE: 1/4" = 1'-0"



KEY PLAN

SCALE: NTS

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INTERIORS | LANDSCAPE DESIGN
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Buffalo, New York 14203
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RAM-TECH Engineers, PC
Expires: 03/31/2022
SOS ID# 5296997
BABI 23655
Signed on: 02/28/2020

RENOVATE LABS
FURNAS 514
DISCIPLINARY
EXCELLENCE

UNIVERSITY AT BUFFALO
NORTH CAMPUS
BUFFALO, NY 14260

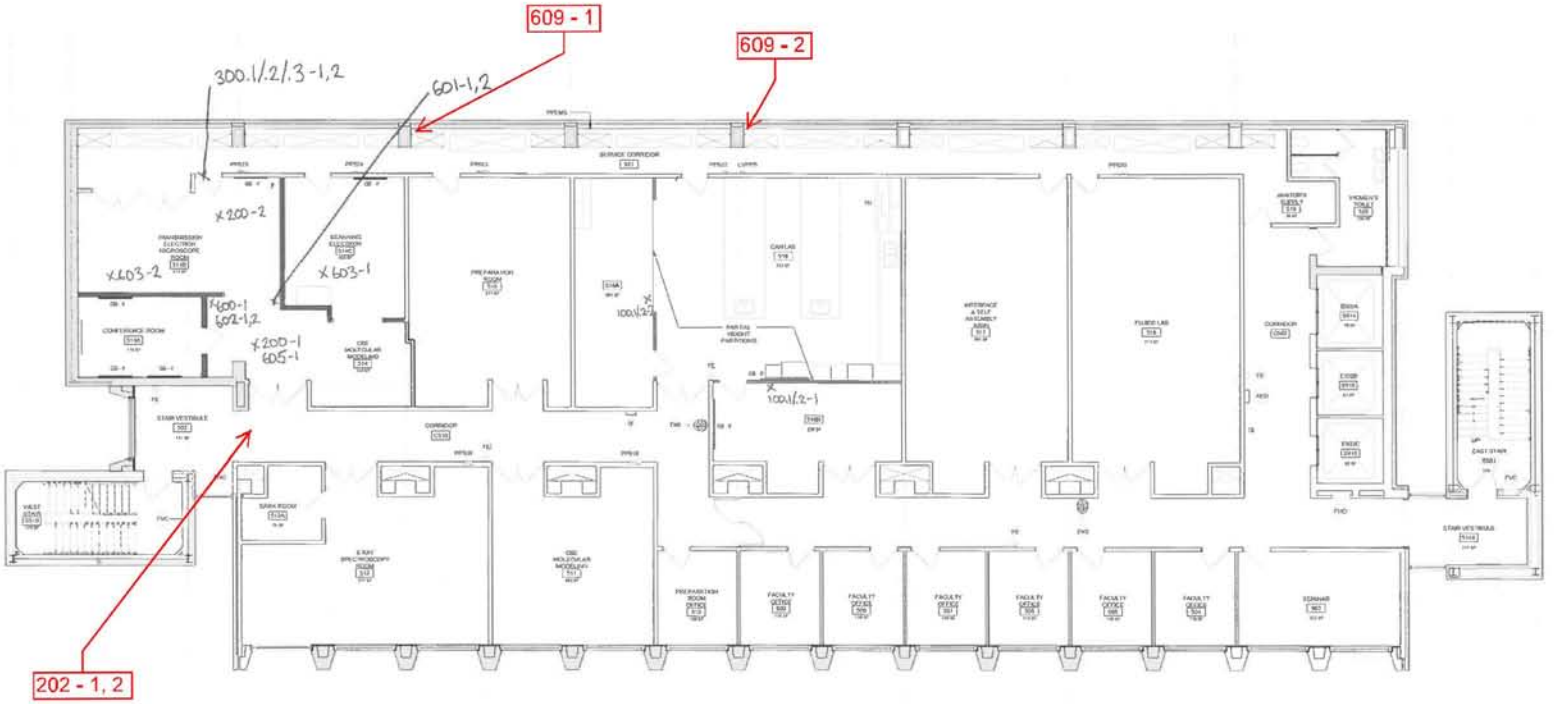
PERMIT SET

PARTIAL ENLARGED 4TH FLOOR PLAN - PLUMBING

No.	Date	Description

JMT	JMT
2023035.02	03/05/2025
2025-087	

5-PL101



FIFTH FLOOR PLAN - EXISTING

UNIVERSITY AT BUFFALO

2023035.00

09/22/2023

EXISTING FIFTH FLOOR PLAN

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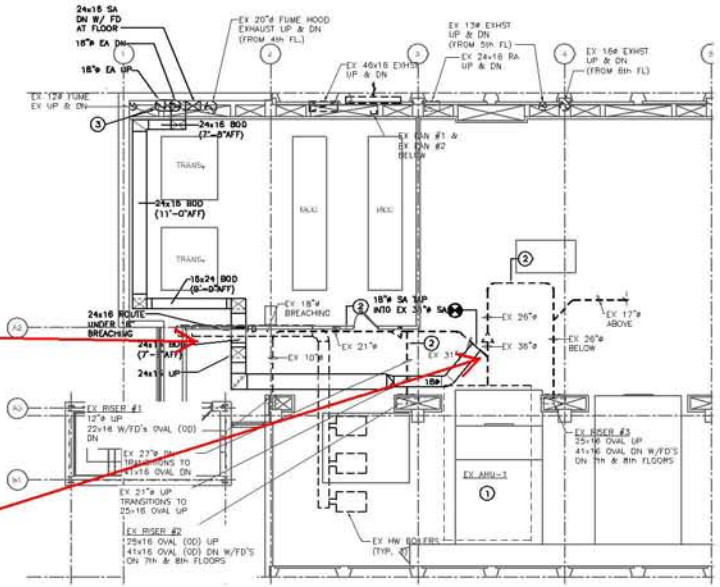
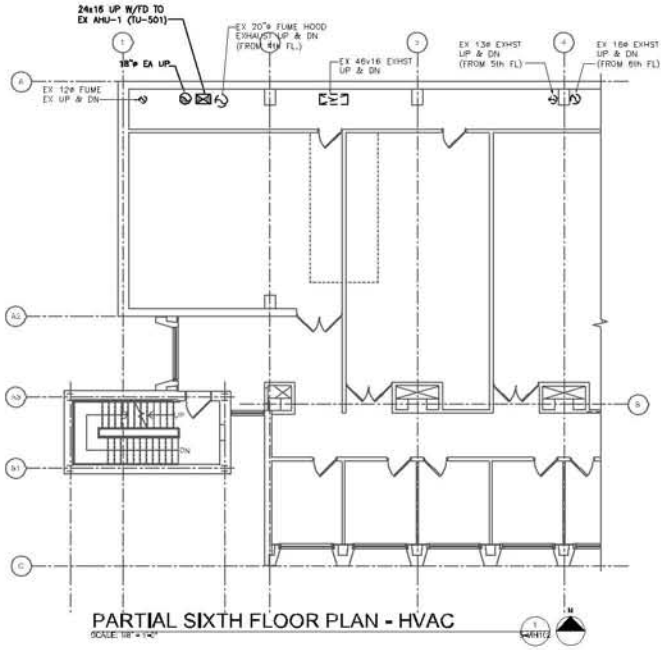


101.1/.2 - 1, 2

613 - 1, 2
614 - 1, 2

PARTIAL SEVENTH FLOOR PLAN - HVAC

SCALE: 1/8" = 1'-0"



PARTIAL SIXTH FLOOR PLAN - HVAC

SCALE: 1/8" = 1'-0"

DRAWING NOTES:

A. PROVIDE ALL CUTTING, PATCHING AND FIRESTOPPING REQUIRED TO ACCOMPLISH WORK SHOWN. PATCH AND SEAL OPENINGS TO MATCH ADJACENT WALLS, FLOORS, CEILINGS, ETC. UNLESS OTHERWISE INDICATED.

B. CONCEAL ALL WORK IN FINISHED AREAS UNLESS OTHERWISE INDICATED OR DIRECTED BY ARCHITECT.

C. PROVIDE ALL CONTROL COMPONENTS, CONTROL WIRING, AND CONNECTIONS TO PROPERLY CONTROL AND OPERATE SYSTEMS AS INDICATED. ALL NEW CONTROL COMPONENTS, THERMOSTATS, SENSORS, ETC., SHALL BE ELECTRIC TYPE. PROVIDE ALL CONTROL WIRING IN APPROVED RACEWAY SYSTEMS; REFER TO DIVISION 26 SPECIFICATIONS.

D. FIELD VERIFY ALL LOCATIONS, DIMENSIONS AND EXISTING CONDITIONS (PIPING, DUCTWORK, STRUCTURAL ELEMENTS, ETC.) PRIOR TO STARTING WORK. CONTRACTOR SHALL COORDINATE INSTALLATION OF EQUIPMENT, PIPING AND DUCTWORK WITH EXISTING CONDITIONS. PROVIDE FITTINGS, TRANSITIONS, OFFSETS, ELEVATION CHANGES, ETC. TO MINIMIZE CONFLICTS WITH EXISTING CONDITIONS.

E. MAINTAIN THE INTEGRITY OF ALL EXISTING EQUIPMENT AND SYSTEMS LOCATED OUTSIDE THE WORK AREA AND INTERRUPTED BY THE RENOVATION WORK. PROVIDE ALL ADDITIONAL PIPING, FITTINGS, DUCTWORK, ACCESSORIES, ETC. REQUIRED TO EXTEND AND RECONNECT REMAINING EQUIPMENT AND SYSTEMS.

F. SCHEDULE SYSTEMS SHUTDOWNS WITH OWNER PROVIDE A MINIMUM OF 72 HOUR NOTICE. SYSTEM SHUTDOWNS SHALL NOT INTERFERE WITH BUILDING OPERATIONS. PROVIDE TEMPORARY SYSTEMS DURING SHUTDOWNS AS REQUIRED BY OWNER. MAINTAIN EXISTING SYSTEMS OPERATIONAL PER THE OWNER'S REQUIREMENTS.

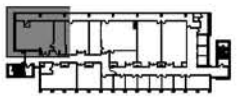
G. EXISTING EQUIPMENT LOCATIONS, DUCT SIZES AND PIPE SIZES SHOWN ARE APPROXIMATE AND NEED TO BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO STARTING THE WORK. NOT ALL EXISTING HVAC EQUIPMENT, DUCTWORK AND PIPING IN THE WORK AREA HAVE BEEN SHOWN. FIELD VERIFY ACTUAL EXTENT OF WORK AT SITE.

H. SYSTEMS INDICATED ON DRAWINGS SHALL BE INSTALLED AS SHOWN. ADJUSTMENTS TO LOCATIONS OF VARIOUS ITEMS MAY BE REQUIRED BY FIELD CONDITIONS AND COORDINATION WITH THE WORK OF OTHER TRADES. VERIFY PRIOR TO INSTALLATION

I. PROVIDE SERVICE CLEARANCE FOR ALL HVAC EQUIPMENT AS RECOMMENDED BY MANUFACTURER.

KEYED NOTES:

1. PRIOR TO STARTING WORK, MEASURE ALL EXISTING AIR INLET AND OUTLET AIR FLOWS WITHIN THE WORK AREA. IN ADDITION, VERIFY OPERATING CONDITIONS OF AC-1 SUPPLY AIR SYSTEM. DOCUMENT EXISTING OPERATING CONDITIONS PRIOR TO REMOVAL (AIRFLOW, STATIC PRESSURE, VOLTAGE, OPERATING AMPS, ETC.) AND SUBMIT WRITTEN REPORT OF MEASUREMENTS TO ENGINEER FOR REVIEW AND COMMENT.
2. MEASURE EXISTING SUPPLY AIRFLOW PRIOR TO STARTING WORK AT THIS LOCATION.
3. COVER EXHAUST DUCT IN ELECTRIC ROOM WITH FIRE BARRIER DUCT WRAP ENTIRE LENGTH – FLOOR TO CEILING



KEY PLAN

SCALE: NTS

RAM-TECH Engineers of Syracuse, P.C.

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Kideney Architects, P.C.
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STATE OF NEW YORK — DANIEL RADEL — LICENSED PROFESSIONAL ENGINEER — NO. 086353

RAM-TECH Engineers, P.C.
Expires: 03/29/2027
BOS ID# 1295597
RAM# 23033
Signed on: 03/26/2025

RENOVATE LABS
FURNAS 514
DISCIPLINARY EXCELLENCE
UNIVERSITY AT BUFFALO
NORTH CAMPUS
BUFFALO, NY 14260

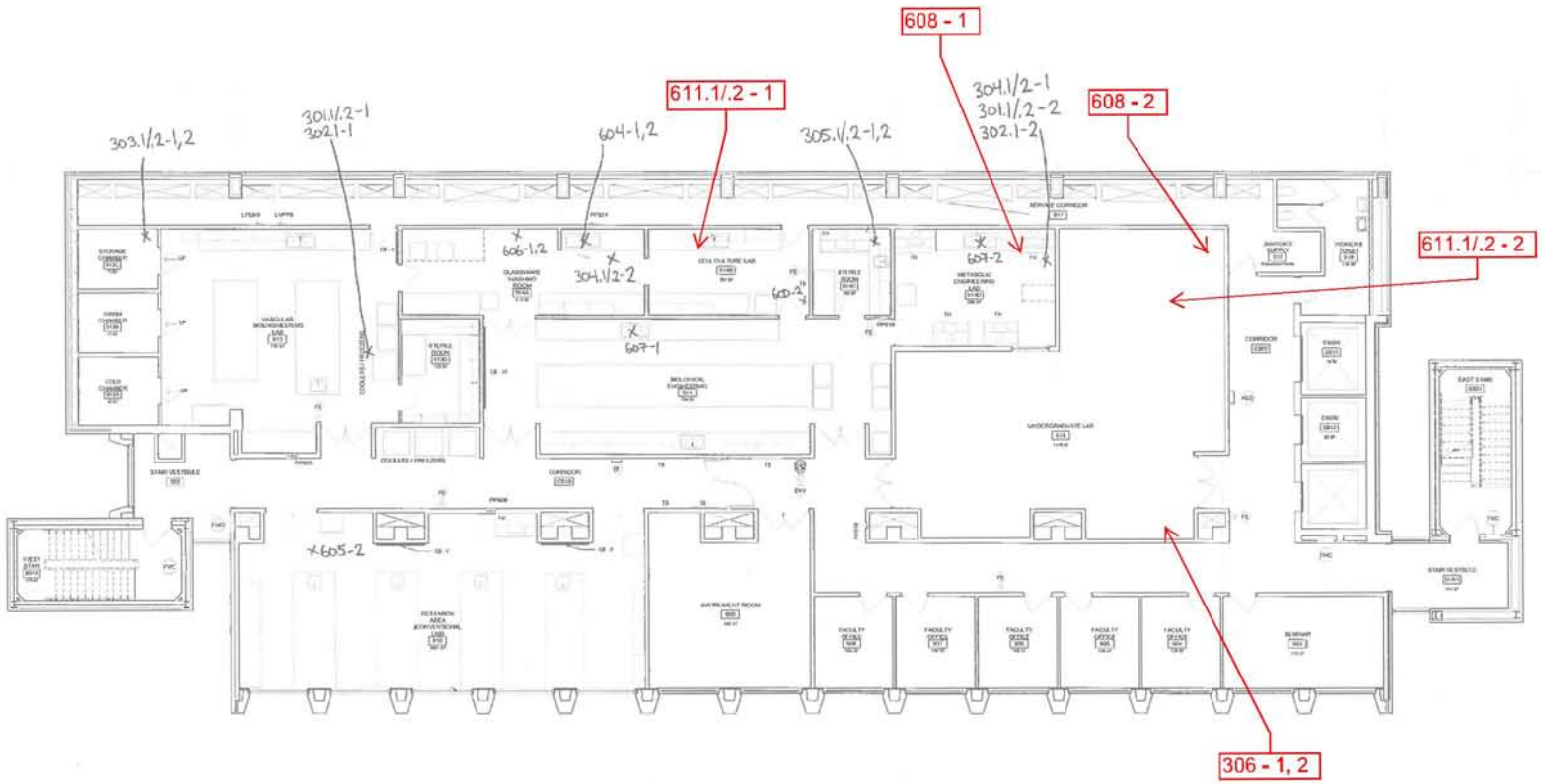
PERMIT SET

PARTIAL SIXTH & SEVENTH FLOOR PLANS - HVAC

TAM	EGU
20230355.02	03/25/2025

25254087

5-MH102



NINTH FLOOR PLAN - EXISTING

UNIVERSITY AT BUFFALO

2023035.00

09/22/2023

EXISTING NINTH FLOOR PLAN

KideneyArchitects

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Appendix F

Summary of Inspected Functional Spaces

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- C510 - Corridor
- 514 - Chemical & Biological Engineering Department
- 514A - Chemical & Biological Engineering Department
- 514B - Chemical & Biological Engineering Department
- 514C - Chemical & Biological Engineering Department
- 514D - Chemical & Biological Engineering Department Not on Map
- 516 - Can Lab
- 516A - Can Lab
- 516B - Can Lab
- C902 - Corridor
- C910 – Corridor
- 909 – Cell Culture Lab
- 910 - Enzyme Engineering
- 913 - Vascular Engineering
- 913A - Cooler
- 913B - Cooler
- 913C - Storage
- 913D - Sterile Room
- 914 - Biological Engineering
- 914A - Glassware Washing
- 914B - Cell Culture Lab
- 914C - Sterile Room - Eukaryotes
- 914D - Metabolic Engineering
- 916 – BioChemical Engineering

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Appendix G

Site Photographs

ENCORUS GROUP

23 Mechanic Street
Springville, NY 14141

295 Main Street
West Seneca, NY 14224

encorus.com
716.592.3980

Photo #1: HAN300.2/.3 – 12” x 12” Floor Tile and Mastic

Photo #2: HAN301.1/.2 - 12” x 12” Floor Tile – Black and associated mastic and HAN302.1/.2 - 12” x 12” Floor Tile – Brown, Black Mottled and associated mastic.

ENCORUS GROUP

23 Mechanic Street
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West Seneca, NY 14224

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Photo #3: HAN304.2 12" x 12" Black Mottled Floor Tile Mastic.

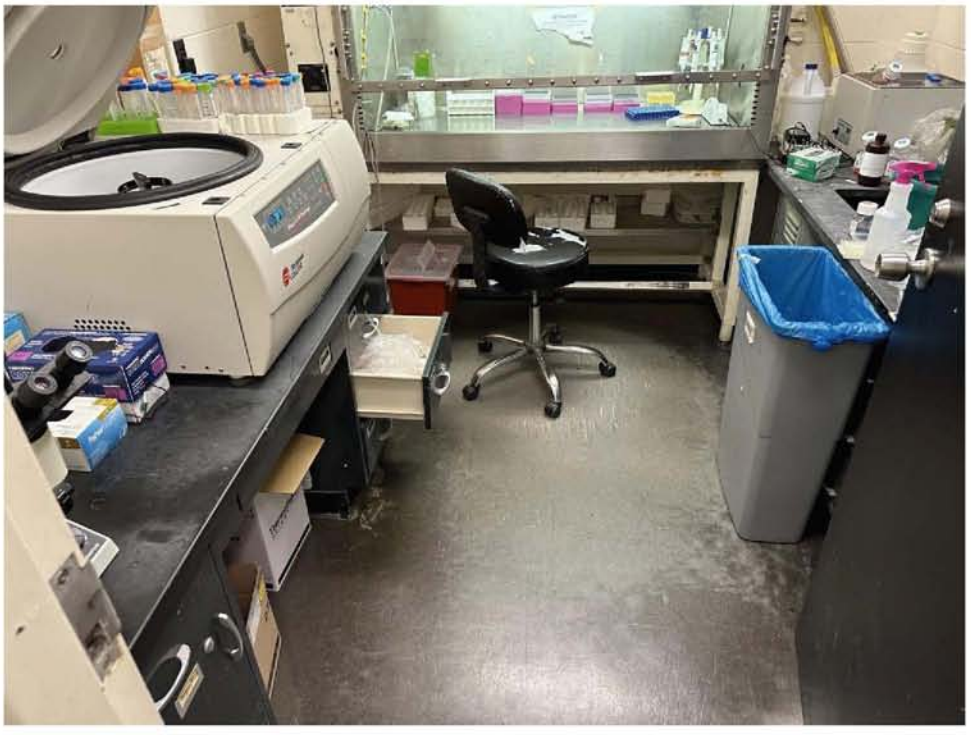

Photo #4: HAN305.2 12" x 12" Brown Mottled Floor Tile Mastic

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Photo #5: HAN608 -Cement Board Paneling

PART 1 - GENERAL

1.1 FORM OF AGREEMENT AND GENERAL CONDITIONS

A. The following form of Owner/Contractor Agreement and form of the General Conditions to be used for Project:

1. State University of New York Construction Agreement.
2. The General Conditions are included in the Project Manual.
3. The Supplementary Conditions for Project are separately prepared and included in the Project Manual.
4. Owner's document(s) bound following this Document.

1.2 ADMINISTRATIVE FORMS

A. Administrative Forms: Additional administrative forms are specified in Division 01000 General Requirements.

B. Information and Modification Forms:

1. Form for Requests for Information (RFIs):Refer to section 006313.16 "Request for Interpretation (RFI) for Construction Phase. Submit electronically via Kideney Architects MasterLibrary Projects Construction Administration Software "RFI" module.
2. Form of Request for Proposal: Submit electronically via Kideney Architects MasterLibrary Projects Construction Administration Software "Proposal" Module.
3. Change Order Form: Submit electronically via Kideney Architects MasterLibrary Projects Construction Administration Software "Change Orders" module.
4. Form of Architect's Memorandum for Minor Changes in the Work: Issue electronically via Kideney Architects MasterLibrary Projects Construction Administration Software 'ASI" module.
5. Form of Change Directive: Issue electronically via Kideney Architects MasterLibrary Projects Construction Administration Software "Field Orders/RFP's" module.

C. Payment Forms:

1. Schedule of Values Form: AIA Document G703-1992 "Continuation Sheet."
2. Payment Application: "State University of New York Contractor's Application and Certification for Payment" and AIA Document G703-1992 "Continuation Sheet".
3. Form of Contractor's Sworn Statement: AIA Document G907-2022 "Sworn Construction Statement".
4. Form of Contractor's Affidavit: AIA Document G706-1994 "Contractor's Affidavit of Payment of Debts and Claims".
5. Form of Affidavit of Release of Liens on Progress Payments: AIA Document G901-2022 "Conditional Waiver and Release on Progress Payment".

6. Form of Affidavit of Release of Liens on Final Payments: AIA Document G903-2022 "Conditional Waiver and Release on Final Payment".
7. Form of Consent of Surety: AIA Document G707-1994 "Consent of Surety to Final Payment."

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)

END OF DOCUMENT 006000

PART 1 - GENERAL

1.1 SUMMARY

A. Contractor: Utilize this form to request information required by or clarifications of the Contract Documents.

B. Refer to Section 013100 "Project Management and Coordination" for instructions for submittal of this form and for definitions used on this form.

1.2 PROJECT INFORMATION

A. Project Name: Renovate Labs Furnas 913, 914 Disciplinary Excellence

B. Project Location: North Campus, Buffalo, New York 14260.

C. Owner: State University of New York at Buffalo.

D. Owner Project Number: SUNY 2025-088.

E. Architect: Kideney Architects, P.C..

F. Architect Project Number: KA No. 2023035.03

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)

END OF DOCUMENT 006313.16

Division 01000 - General Requirements

SECTION A - Description of Work

1. **Work to be Done**

The work to be done under the Contract, in accordance with the Contract Documents, consists of performing, installing, furnishing and supplying all materials, equipment, labor and incidentals necessary or convenient for the construction of Project #: **2025-088 Renovate Labs Furnas 913, 914 Disciplinary Excellence** and carrying out all of the duties and obligations imposed upon the Contractor by the Contract Documents. The main features of the work shall include, but not be limited to the following:

This project will encompass the renovation of approximately 6,450 gross square feet of interior space on the ninth floor of Furnas Hall for the School of Engineering and Applied Sciences. This renovation will include new chemistry lab suites and student work areas. The laboratories will include lab benches, fume hoods, cell culture rooms, a freezer room, microscopy rooms, a cold room, storage and a shared equipment room. The student work rooms will be left empty for client FF&E packages. Full architectural, mechanical, electrical, plumbing, and fire protection work will be required. Work within core support spaces such as the service corridor, mechanical room, and rooftop are included in the scope.

2. **Work Not Included**:

Work not included in the work of the Contract are those items marked "N.I.C"; movable furnishings, except those specifically specified or indicated on the Drawings; and items marked "by others".

SECTION B - Alternates

1. **General**

a. Refer to the Proposal Form. State thereon the amount to be added to or deducted from the Total Bid for the Alternates described herein.

b. The extent and details of the Alternates are indicated on the Drawings, and described in the Project Manual.

c. 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. Alternate No. 1 – Card Access at Conference Room 903

3. **Allowances**

a. Field Order Allowances as specified in the documents shall be included in the bid total.

Unit Prices - None

SECTION C - Special Conditions

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1 Special Project Schedule/Phasing
2 Project Sign
3 Field Office for the University/Consultant
4 Staging Area/Storing of Materials
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6 Temporary Power for Construction Activities
7 Temporary Light
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33 Building Permit/Code Compliance
34 Coordination with other Contracts
35 Asbestos
36 Sustainable Design Reporting
37 NYS Buy Clean Concrete Guidelines
38 Wage Rates and Supplement

1. **Special Project Requirements**

   a. Working hours are from 07:00AM to 04:00PM, Mon-Fri.

   b. The project will take place in an very active research laboratory facility. As such, any material deliveries and hauling of construction debris to dumpsters must be done prior to 8AM of each working day. All dump carts shall be properly covered to avoid spreading dust during transport.

   c. When moving large equipment and tools through occupied spaces, as well as during any exterior operations such as but not limited to setting up and operating lifts, cranes, and swapping dumpers, the contractor shall utilize flagger(s) to alert the nearby campus population.

   d. Any noisy, loud, or disruptive work must not take place during the following:

      a. No specific dates identified by the end users of the work area. Confirm blackout dates with the owner before finalizing the project schedule.

   e. Due to construction adjacent to existing school facilities, noise and dust control is essential. All noisy or disruptive work that may affect the adjacent building rooms must be scheduled two weeks in advance through the University's Project Manager. Work that interferes with the normal operations of school facilities must be performed off-hours at the Contractor's expense, or the Contractor must provide alternate means for the work to continue. Do not leave vehicles and/or equipment idling around unit vent and/or building openings. All exhaust discharges must be routed away from existing fresh air intake louvers. All equipment that will impact these areas shall be equipped with exhaust scrubbers to limit fumes. Noise levels in excess of 60 db are prohibited while school is in session or while occupied by administrative staff or the public. Noise levels will be monitored (measured and recorded) by any contractor with a type 2 sound level meter in an occupied location closest to the source of the noise if requested by the consultant and/or the University, at no additional cost to the University. Noise in excess of 60 db must be coordinated with the University for off-hour work regardless of work duration at no additional cost to the project.

2. **Project Sign – Not required.**

3. **Field Office for the Site Representative – Not required.**

4. Staging Area and Storage of Materials

a. The staging area designated in the contract documents is provided to the Contractor at the University's discretion. If the Contractor determines that they need additional area for their operations, material storage and/or employee parking, the Contractor is solely responsible to provide and pay for any additional area and for any transportation, handling or related costs. Such additional area shall not be on University property.

b. The University shall have the right to reduce the Contractor's staging area if and when, in the University's opinion, the Contractor's operations do not justify using the staging area. If the University determines that reducing the Contractor's staging area is justified it shall notify the Contractor in writing of its decision. The Contractor shall have ten (10) business days to remove any remaining material, equipment or other property from the staging area. Anything remaining after ten (10) business days may, at the University's discretion, be claimed by the University.

c. The Contractor shall store materials and equipment within the Contract Limit Lines as designated on the drawings or as approved by the University/Consultant.

d. 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.

e. Security for stored materials shall be the responsibility of the Contractor.

f. Storage of materials is not permitted on the roof of any building.

g. The Contractor, at its expense, will be permitted to place its trailer/field office with appropriate utilities, within the Contract Limit Lines as indicated on the drawing or as approved by the University/Consultant.

h. Access to the construction site for delivery of materials and equipment shall be as indicated on the drawings or as approved by the University/Consultant. Temporary parking for the loading and unloading of the same shall be arranged with prior approval of the Campus.

i. The Contractor shall at all times keep access routes, and parking and staging areas clean of debris and other obstructions resulting from the work.

j. The Contractor shall be responsible for the cost associated with general maintenance of the Staging Area including but not limited to snow removal, portable fencing and removal of construction debris unless otherwise noted by the University's Project Manager.

k. In the event that the Staging Area is occupied by more than one Contractor, the responsibilities and associated costs noted above shall be coordinated and agreed to by all Contractors sharing such space.

5. Parking/Vehicle Operation

a. The Contractor and its employees shall be subject to all the rules and regulations of the SUNY campus, including parking and vehicle operating regulations. All violations are subject to fines and are the sole responsibility of the Contractor or its employees.

b. Parking within contract limit lines as shown on the drawings will be at no cost for the Contractor and its employees. However, if there is not enough space for all its employee parking and /or its employees choose on their own to use campus parking spaces, additional Contractor employee parking will 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, as noted below. If additional on-campus parking is not available then the Contractor shall be responsible for obtaining and paying for off campus parking and any expenses incurred for transporting personnel between the job site and the parking location.

c. All vehicles shall be registered with the University at Buffalo Department of Parking and Transportation Services.

d. Contractor shall at no time block or occupy Handicap or A-Permit spaces.

e. Driving on pedestrian walkways, pedestrian plazas and grass is prohibited on both the North and South Campuses. University Police will issue tickets for unauthorized driving on sidewalks and pedestrian plazas. Contractors shall also be responsible for any damage caused by accessing sidewalks and/or plazas.

f. Parking hangtags must be purchased with permission from the University at the Department of Parking and Transportation Services Office (716-645-3943). Permits can also be purchased through the following website: (https://www.buffalo.edu/parking/forms/construction-permit.html). Campus Facilities office will not distribute temporary parking permits for regular use by contractors. All Contractors are required to have parking hang tags.

g. A limited number of hang tags shall be approved and issued to the Contractor. The Contractor must obtain a Letter of Authorization from the Department of Facilities Planning and Design which will state the maximum number of hangtags that the Contractor shall be allowed to purchase for performing any contract related services for the duration of the contract. This Letter shall be submitted by the Contractor to the Department of Parking and Transportation Services at the time such hang tags are to be purchased.

h. Requests for what the University determines to be an excessive amount of hang tags shall be denied.

i. Additional parking for Contractor staff may be available in designated construction staging area as directed by the University's Project Manager. Designated staging area is noted on Contract Drawings.

6. Temporary Power for Construction Activities

Electrical energy, as/if it exists within the work area, will be available at no cost to the Contractor from existing outlets or panels from locations approved by the Campus. This power may be used for small power tools (not exceeding 1/2 HP), etc., and the Contractor shall not exceed the capacity of the existing circuits being used. The Contractor shall be responsible for providing all necessary connections, cables, etc. and removal of the same at completion of construction with approval from the State University of New York at Buffalo. The Contractor shall in no way modify the existing circuits at the panel boards to increase capacities of the circuits. If the required power load exceeds the capacities of the available power sources, the Contractor shall be responsible and pay for furnishing and installing all necessary temporary power poles, cables, fused disconnect switches, transformers and electric meters necessary to provide a temporary power system for the project, and remove the same at completion. Install all temporary wiring and equipment and make all connections in conformity with the Building Code of New York State. Make all replacements required by temporary use of the permanent wiring system. Provide ground fault protection.

7. Temporary Light

Electrical lighting, as/if it exists within the work area, is available to the Contractor at no cost. Contractor is responsible for maintaining the minimum temporary lighting level to be at stairs and exit corridors, which is 20 foot-candles per square foot and it shall be maintained for 24 hours, 7 days per week; in all other spaces, temporary lighting at the same level is to be during working hours. If the existing lighting does not meet the aforementioned requirements, the Contractor shall supplement or supply the same, maintain it during the construction period, and remove it at the conclusion of the project, at the contractor's cost. Such lighting shall be Underwriter's Label temporary lighting sockets, light bulbs, and intermittent power sockets as approved by the University/Consultant. Installation shall be in accordance with the Building Code of New York State.

The Contractor shall install, maintain and, when necessary as a result of construction progress and at the completion of all work or at such earlier time as the University/Consultant may approve, remove pigtailed type Underwriter's label lighting sockets, light bulbs and intermittent power sockets. The temporary lighting requirements shall be installed in the structure as soon as the frame is completed and work begins on the enclosing walls. The minimum temporary lighting to be provided is at the rate of 20 foot-candles per square foot, which is to be maintained in each room and changed as required when interior walls are being erected. The required temporary lighting must be maintained for twenty-four (24) hours a day and seven (7) days a week at all stair levels and in all corridors below ground; in all other spaces temporary lighting is to be maintained during working hours.

8. Temporary Sanitary Facilities

The Contractor will be permitted to use existing toilet and janitor closet facilities as designated by the Campus provided the existing facilities are not misused, defaced, or left in an unsanitary or unclean condition. If the University/Consultant deems that the existing facilities have been subject to misuse or left unsanitary, the Contractor shall be informed and caused to install and maintain (at its own cost) temporary, sanitary facilities at an approved location. The Contractor shall also be held responsible for the cost of cleaning and repair of any damage to said existing facilities and adherence to health and sanitary codes of the State of New York.

9. Temporary Heating and Cooling

a. Heat and cooling, as/if it exists within the work area, is available to the contractor at no cost. If the existing heating or cooling does not meet the requirements indicated below or as required in the specifications, the Contractor shall supplement or supply the same, maintain it during the construction period, and remove it at the conclusion of the project, at its cost. Such supplemental heating and cooling shall be in compliance with all applicable, codes, rules and regulations.

b. The Contractor shall protect the existing HVAC from dust and debris. If ductwork and/or mechanical equipment are contaminated with dust and/or debris, the Contractor shall clean them to the University/Consultant's satisfaction.

c. The Contractor shall provide and pay for all temporary heating and cooling, coverings and enclosures necessary to properly protect all work and materials against damage by dampness and cold, dry out the work, and facilitate the completion thereof. The fuel, equipment, materials, operating personnel and the methods used therefor shall be at all times satisfactory to the University/Consultant and adequate for the purpose intended. The Contractor shall maintain the critical installation temperatures, provided in the technical provisions of the specifications hereof, for all work in those areas where the same is being performed.

d. The maintenance of proper heating, cooling, ventilation and adequate drying out of the work is the responsibility of the Contractor and any work damaged by dampness, insufficient or abnormal heating or cooling shall be replaced to the satisfaction of the University/Consultant by and at the sole cost and expense of the Contractor.

e. After the Project is enclosed, the Contractor shall provide all necessary, temporary heating and cooling for the efficient and effective work by itself and all trades engaged in the work. Unless otherwise specified, the minimum temperature shall be 50°F at all places where work is actually being performed within the enclosed Project.

f. Before and during the placing of wood finish, and the application of other interior finishing, varnishing, painting, or any other temperature sensitive construction, and until final acceptance by the University of all work covered by the Contract, the Contractor shall, unless otherwise specified in the Contract Documents, provide sufficient heat or cooling to produce a temperature of not less than 68°F nor more than 78°.

10. Temporary Water for Construction Purposes

Water for construction is available through the campus system without charge to the Contractor from location designated by the University. The Contractor shall obtain the necessary permits, make all connections, as required, furnish and install all pipes and fittings, 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.

11. Field Meetings

Periodic job meetings, bi-weekly at minimum, will be scheduled by the University/Consultant during the course of construction. The Contractor, and, upon request of the University/Consultant, its principal subcontractors and manufacturer's representatives, shall attend such meetings and be prepared to furnish

answers to questions on progress, workmanship, or any other subject on which the University/Consultant might reasonably require information.

12. Conducting Work

a. 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.

b. The Contractor will be required to designate a competent person(s) to act as the Project Superintendent and technical resource for the duration of the project which includes but not limited to all subcontractors. The Project Superintendent will be responsible to be on site at all times when work is in progress and coordinate all of the general construction and coordinate with the other subcontractors. The Project Superintendent shall act as the agent for the University and will be responsible to report back to the University's Project Manager. If there is a requirement to work of the scheduled hours, the Project Superintendent designated by the General Contractor will need to be available on designate off hours and during the event of an emergency.

c. The University shall assign a "Project Manager" upon award of this contract who shall be the primary contact for all work associated with this contract performed at the University. The Contractor will coordinate all subcontractors with the University's Project Manager.

d. Safe and direct entrance to and exiting from the existing buildings shall be maintained at all times during regular hours while construction is in progress. See 12.g

e. Unless otherwise permitted by the University, the removal and/or demolition of given work items shall not occur until the Contractor has all the required replacement materials on-site.

f. The Contractor and its employees shall comply with University regulations governing conduct, access to the premises, and operation of equipment.

g. 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.

h. 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. See14.j.and o.

13. Communication Requirements

The Contractor is responsible for equipping the said Competent Person as noted in Section 12 b. above with mobile and/or land-line telephone service for the duration of this contract, the cost of such service(s) shall be the responsibility of the Contractor.

14. Safety and Protective Facilities

a. The University at Buffalo Office of Emergency Management has provided Contractors working on University property the ability to gain access to UB Alerts if they choose to opt-in. This feature is extremely useful, as contractors working on campus will get the same emergency notifications that students, faculty and staff get. To opt-in, the contractor needs to text "UBAlert" to 67283.

b. Prior to the commencement of any work, the Contractor shall submit a copy of their "Safety Manual" to the University's Project Manager for review and coordination with University Policies.

c. Providing the "Safety Manual" does not relieve the Contractor of their sole obligation to protect the public and existing facilities.

d. The Contractor shall provide the necessary safeguards to prevent accidents, to avoid all necessary hazards and protect the public, the Staff, students, the work and property at all times, including Saturdays, Sundays, holidays and other times when no work is being done for the project's duration.

e. 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 241, for safeguarding of structures during construction.

f. In the event that the Contractor finds pre-existing conditions or causes conditions that could prove to be hazardous to people and/or University property, the University's Project Manager shall be notified immediately and the Contractor shall take appropriate action immediately to protect people and property.

g. Whenever and wherever, during the course of performing any work under this contract, the Contractor discovers the presence of asbestos or suspects that asbestos is present; the Contractor shall stop the work immediately, secure the area, and notify the University's Project Manager. Work shall not be resumed in the surrounding area until testing of the suspect material has been performed and if positive for ACM, the ACM is abated.

h. Contractor shall refer to https://www.buffalo.edu/administrative-services/managing-facilities/environment-and-safety/working-safely/construction.html
   i. which serves as a notification of Campus safety requirements to contractors.

i. Contractor shall refer to https://www.buffalo.edu/administrative-services/managing-facilities/environment-and-safety/working-safely/construction/utility-locating-procedure.html
   i. in regard to the University's policy and requirements for Excavation Marking and Dig Safe procedure.

j. Contractor shall refer to
   i. http://www.buffalo.edu/administrative-services/policy1/ub-policy-lib/corridor-use.html
   ii. in regard to the University's Corridor Use Policy which includes guidelines for maintaining clear and unobstructed means of egress for occupants of the University's buildings and facilities.

k. Contractor shall refer to
   i. http://www.buffalo.edu/administrative-services/managing-facilities/environment-and-safety/working-safely/fire-life/hot-work-permit.html

l. Contractor shall refer to
   i. http://www.buffalo.edu/administrative-services/managing-facilities/environment-and-safety/working-safely/fire-life/building-evacuation-plans.html
   ii. in regard to General Evacuation Procedure in the event that the fire alarm system is activated in the area that contract work is being performed. Contactor's staff shall exit the nearest accessible non-obstructed.

m. Effective July 18, 2008, for contracts in excess of $250,000, Contractors are required to comply with Labor Law Section 220-h; which requires that its workers be certified as having successfully completed the OSHA 10-hour Construction Safety and Health Course; and comply with the applicable NYS Department of Labor rules and regulations for monitoring and reporting compliance of same.

n. In an emergency on the North or South Campuses, the Contractor shall call University Police at (716) 645-2222 instead of the traditional 911 and notify the University's Project Manager. In an emergency on the Downtown Campus, the Contractor shall call 911 and notify the University's Project Manager.

o. The University reserves the right to stop work that is proceeding in an unsafe manner

p. Contractors entering confined spaces shall submit their company policy and procedures to the University's Project Manager for review prior to entry. The contractor obtain a University Department of Environmental Health and Safety Confined Space Permit must be obtained prior to entry, and can be obtained by calling 716-829-3301.

15. Temporary Fire Protection

a. If the existing building is to be partially occupied during the course of the project, all existing exits and fire protection systems shall be continuously maintained in the occupied spaces, or other measures must be taken which in the opinion of the University/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. The Contractor shall comply with all applicable State and Federal codes and regulations. 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.

b. All provisions of Section 1408 of the Fire Code of New York State shall apply. The Contractor shall comply with all directives from the Fire Prevention Program Superintendent with respect to this section.

c. Provide all temporary equipment, labor and materials required for compliance with the applicable provisions of Chapter 14, Fire Safety during Construction and Demolition, of the Fire Code of New York State.

d. For areas and spaces under their control, the Contractor shall comply with Chapter 14 of the Fire Code of New York State, titled "Fire Safety during Construction and Demolition." Subject to approval by the University, the Contractor shall designate one person as the fire prevention program superintendent. This superintendent shall be responsible for the fire prevention program required by Section 1408 of the Fire Code of New York State 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. Responsibilities also include developing and maintaining pre-fire plans per 1408.2, the training of the Contractor's workforce per 1408.3, maintenance of fire protection equipment per 1408.4, supervising hot work operations per 1408.5 and implementing temporary impairment to existing fire protection systems per 1408.6 and 1408.7. This superintendent shall also provide periodic written reports at the field meetings and respond to questions raised concerning compliance with Chapter 14 of the Fire Code of New York State.

16. 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, in accordance with University's Standards.

17. Utility Shutdowns and Cutovers

a. Except as otherwise expressly provided in the Contract Documents, the Contractor shall be responsible for submitting to the University Contract (A) General Contractor, 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) week's advance notice prior to the time of the proposed shutdown and cutover. The University is 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.

b. 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 University/Consultant and the University.

18. Cutting and Patching

a. The Contractor shall do all cutting, fitting, and patching of its work 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.

b. Any cost caused by defective or ill-timed work shall be borne by the party responsible therefore. 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 University/Consultant and the University.

c. Existing construction requirements, 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 University, or replaced with new, at no additional cost.

d. 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 University/Consultant and the University.

e. 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 University/Consultant and the University.

f. All new, altered, or restored work in the building shall match existing corresponding work in the material, construction finish, etc., unless otherwise specified or required by the drawings.

19. Use of Elevators

The Contractor shall be permitted to make temporary use of elevator(s) designated by the campus, provided such use does not interfere with the normal activities of the University or exceed the capacity of the elevator(s). Large and heavy items shall not be placed in elevators, and suitable padding shall be provided whenever a cab is used for construction purposes. Elevator pits shall be kept free of debris and dust by frequent cleaning out. The elevators shall be restored to original condition satisfactory to the University/Consultant at the end of construction activities. Use of the top of the elevator may be permitted only after obtaining appropriate approval from the University/Consultant.

20. Salvage of Materials

Remove and legally dispose of all debris and other materials resulting from the alterations to State University property. Any items indicated to be salvaged by contract documents shall remain the property of the University and be stored at the site as directed by the University/Consultant.

21. Submittals, Shop Drawings and Samples - (Refer to Section 2.19 of the Agreement)

a. The General Contractor for will be required to complete the "Shop Drawing and Sample Record, Product Submittal Log" before any submittals can be reviewed. The submittal log can be found in Section E – Amendments and an electronic copy can be provided if requested. No submittals will be processed until the submittal log has been submitted and reviewed and approved by the University.

b. The Contractor shall submit to the University for its approval, six (6) sets of prints of all shop drawings required by the specifications.

c. In addition to paper prints, Contractor is required to submit electronic versions of the prints on two separate compact discs (CDs); one to include all .pdf drawings and the other to include all CAD drawings.

d. CAD drawings shall comply with the University's current CAD standards including software and versions.

e. Those marked *"REJECTED"* are not in accordance with the Contract Documents and shall be resubmitted.

"REVISE AND RESUBMIT" Contractor shall correct and resubmit.

"MAKE CORRECTIONS NOTED": The Contractor shall comply with corrections and may proceed. Re-submittal is not required.

"APPROVED - NO EXCEPTIONS TAKEN": The Contractor may proceed.

f. All shop drawings and/or submittals used on the construction site must bear the impression of the University/Consultant's review stamp as well as the General Contractor's review stamp, indicating the status of review and the date of review.

g. 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.

h. All shop drawings, submittals and samples shall include:

1) Date and revision dates.
2) Project title and number.
3) Names of:
   a. Contractor
   b. Subcontractor
   c. Supplier
   d. Manufacturer

4) Identification of products or materials: Include Department of State (DOS) file number, manufacturers' name and market name of all covered products and applicable materials in accordance with Part 1120 of the Code. This information may be obtained by contacting the DOS, Office of Fire Prevention and Control: 518 474-6746 [voice] and 518 474-3240 [FAX])

22. Coordination Drawings

a. Before construction work commences and before submitting shop drawings for sleeves, piping, ductwork, etc., the Contractor shall require that the installers/ subcontractors for all trades submit Coordination Drawings.

b. The Contractor shall manage the process so that each trade/subcontractor provides all required information in a timely manner. Coordination Drawings may be completed on a phased basis so as not to delay the overall project schedule. The CPM Schedule specified elsewhere in this section shall be amended to include the submission of Coordination Drawings. The same shall demonstrate how the Contractor intends to integrate the submission of Coordination Drawings to suit the overall project schedule.

c. Coordination Drawings shall show the resolution of trade conflicts in congested areas prior to submission of shop drawings and actual installation. The Drawings shall coordinate the placement and location of ductwork, fittings, light fixtures, cable trays, fire alarm devices, sprinklers, air terminals, hangers, supports and other ceiling mounted items shown and specified with each other, and other building elements such as ceilings, structural work, case work, equipment, doors, manufacture's recommended maintenance clearances, code required clearances (NEC, etc.), access doors and other contract work.

d. In public and occupied areas without scheduled finish ceilings, appearance is a major coordination factor. Reposition proposed locations of work after Coordination Drawing review by the University and/or University Consultant. Provide adjustments to the exact size, location and offsets of ducts, pipes, and conduit to achieve reasonable appearance objectives. Provide these adjustments as part of the Contract or if the adjustment cannot be made, notify the University/Consultant immediately and provide factual justification for the University's//Consultant's review.

e. The medium and format of the Coordination Drawings shall be as follows:

i. The Contractor shall use CADD software to create the Coordination Drawings. The Contractor shall use the University at Buffalo's latest version of AutoCAD Standards as the format for all coordination drawings in electronic format.

ii. Each Division 23 and 26 trade shall be assigned a layer to create the detailing work of each section or division of the Specifications requiring coordination. The Contractor shall insure that the layer assigned to one trade cannot be modified by another trade, and that the final product clearly

differentiates which trade is responsible for the respective information shown. The latter may occur through the use of colors or other distinct graphic methods.

iii. The final product shall be in the form of reproducible transparencies drawn at a scale not less than 3/8 inch per foot for the entire building and each mezzanine. Mechanical and Electrical equipment rooms shall be drawn separately at a scale not less than 1/2 inch per foot and be submitted with the drawings of the entire building. At conflicts between the trades, provide details, elevations and sections of similar or larger scale as may be required to provide a clear three-dimensional resolution of the conflict.

f. The Coordination Drawings shall be prepared as follows:

g. The Contractors shall prepare the base floor plan(s) in the medium chosen.

h. The HVAC trade installer shall prepare the first layer of the Coordination Drawings showing all ductwork, and all pertinent heating piping and equipment. This plan may be a copy of the required ductwork shop drawings.

i. The Contractors shall provide electronic or transparent copies to all the other trades/subcontractors.

j. The Plumbing, Fire Protection, Controls and other Division 22 and 23 trades shall show all their piping, equipment, valves, fittings and other specified appurtenances.

k. The Electrical, Fire Alarm, and other Division 26 and 28 trades shall show all systems and equipment, including transformers, panels, terminals, devices, detectors, lighting fixtures, cable trays, outlets, and conduits and raceways 1" or larger. Cable tray layout shall include appropriate clearances to motors, ballasts, and other sources of electromagnetic interference.

l. The Contractors shall review the Drawings and indicate areas of Architectural, Equipment, Structural and other conflicts and obstacles and coordinate locations of rated and exterior walls to assure their continuity and closure as specified. The Contractor determines that all work can be installed without interference. In the case of unresolved interference, he shall notify the University/Consultant. The University/Consultant will then suggest to the Contractor as to how to revise the Drawings to eliminate interference. The Contractor shall then have the trade(s) revise their respective Drawings to eliminate interference.

m. Fabrication and installation of work in a given bay or area shall not proceed until the Contractor has made all trades agree on the exact arrangements for each bay or area. If a given trade proceeds prior to resolving conflicts, then, if necessary, that trade shall change its work at no extra cost in order to permit the other trades to proceed with a coordinated installation. Coordination approval may be given by the Contractor for a bay or area only after site meetings involving all trades have occurred.

n. In the event of conflict areas without ductwork, each respective trade in conflict shall prepare coordination drawings showing the suggested final arrangements for review.

o. Coordination Drawings are intended for use by the respective trades during construction and shall not be construed as replacing either the shop drawings specified in the technical specifications or the Record Drawings required in the Agreement.

p. Submit Coordination Drawings for review in the same manner as specified for shop drawings. The University/Consultant's review of Coordination Drawings shall not relieve the Contractor from his responsibilities for coordinating the work with the work of all trades involved on the Project. The University/Consultant's review shall not authorize any extra cost, omission and/or deviation from the requirements of the Contract Documents. Any costs arising from errors and omissions in the Coordination Drawings shall be borne by the Contractor.

q. Provide two complete copies and one electronic copy of CADD drawings at the completion of the work. All copies shall become the property of the University.

23. CPM- Schedule

In addition to the requirements of Article III, Section 3.02 of the Agreement:

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 Section i. 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 Microsoft Project or University approved equal. Other computer software will not be accepted unless otherwise approved in writing by the University.

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 i 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 starts 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 (where applicable).
ii. Subcontractor selection and approvals (major subcontractors submitted within 48 hours of bid).
iii. Shop drawing and submittal preparation and approval activities.
iv. Procurement schedule (order dates, fabrication, deliveries, and long lead items).
v. Special campus restrictions, i.e., noise/ testing & examination/ site and building access etc.***
vi. Requirements for any on site shutdowns that may impact work.
vii. Training and/or instruction of campus personnel.
viii. Commissioning of major building systems.
ix. Coordination of owner-supplied or owner-installed items.

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 Project shall be provided along with the initial submittal and each update using Microsoft Project software or equal. 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 Section i below.

g. A CPM Report and overall updated project schedule shall be provided on a monthly basis at minimum 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. Submission and review of the schedule shall be as follows:

1) A preliminary schedule defining the contractor's planned operations during the first 120 days after the Project Notice of Award shall be submitted within 30 calendar days after receiving the Executed Contract. Notwithstanding any other requirements, the first

request for payment (progress payment) will not be approved until the requirements of this paragraph are met.

2) The complete CPM Schedule, including the time-scaled logic diagrams, narrative, summary schedule, manpower schedule if applicable (see section 8-G below), and activity reports shall be submitted within 90 calendar days after receipt of the Executed Contract. The University and 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 "Baseline" for project monitoring purposes. Altering the Baseline schedule is prohibited unless otherwise approved by the University.

3) This review of the Schedule of Record is for the sole purpose of determining whether it meets the overall project objectives and milestone dates and 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 - THESE ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

4) Float is defined as the amount of time between the early start date and the late start date or the early finish date and the late finish of any of the activities in the CPM Schedule.

5) Initial submittal, complete revisions and monthly updates shall be submitted via email to the University and Consultant both in native file and PDF format.

6) The Schedule shall be updated every month and shall be submitted along with the Contractor's application for payment.

i. Milestone Dates & Summary Activities

1) Notice of Award (Milestone Date)
2) Mobilization
3) Environmental & Abatement
4) Site Preparation & Foundations
5) Building Frame & Enclosure
6) M-E-P-S (Mechanical, Electrical, Plumbing, Sprinkler & Fire Systems) Rough-In & Major Equipment Installation
7) M-E-P-S Systems-Fixtures/Trim/Accessories
8) Interior General Construction
9) Equipment & Specialties
10) Exterior Walks, Parking, Roads, & Landscape
11) Testing, Training & Commissioning
12) Life Safety Systems Tested & Accepted (Milestone Date)
13) Substantial Completion/ C of O (Milestone Date)
14) Campus Installed/Furnished FF&E (Fixtures, Furnishing & Equipment)
15) Start of Guarantee Period
16) Final Completion - All punchlist/outstanding items satisfied (Milestone Date)
17) Other milestones as required by the University, the University/Consultant or the Contractors.

24. Document Tracking and Change Control – Contractor to provide updated Submittal, RFI, and Change Order Logs Monthly as it pertains to their own scope of work.

25. Project Photographs – Progress photos are required to be included with the daily construction reports.

26. Cleanup

a. Periodic Cleaning: The General 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 University/Consultant and the University. Cleaning of the structure(s),

once enclosed, must be performed daily and removal of waste matter or rubbish must be performed at least once per week.

b. Final Clean Up: Upon completion of the work covered by the General Contractor, the General 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. 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 University, 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 University at the expense of the Contractor, and it and its surety shall be liable therefore.

27. Construction Waste Management

a) In accordance with the State University Construction Fund's general requirements, the contractor conducting work shall provide and manage a project specific Construction Waste Management Plan (the Plan). The Plan shall have reasonable criteria for recycling and/or salvaging demolition and construction waste generated during the project. The plan shall demonstrate a good faith effort to meet the Campus' goal (the Goal) of recycling at least 50% of the construction and demolition waste generated by this contract.

1. Provide the proper labor, equipment and other means for collecting, separating, monitoring, storing, processing, transferring, tracking and transporting waste from the point of creation during the project to the point of its final disposition off the site of the Project.
2. The Plan shall outline the means and provisions for separating, recycling and salvaging demolition and construction waste generated during the project. Modify and resubmit the Plan periodically as needed to suit the field conditions of the site that may not have been anticipated in the original submission. The Plan will have a Waste Management Form (in Microsoft Excel) for written reporting on and accounting for all materials transferred from the project site.
3. Demolition and removal work on campus shall be limited to the minimum work required to create a debris stream that allows for reasonable handling and transport. Additional work on debris material, such as grinding, cutting or crushing, which may be desired by the Contractor to make the material ready for reuse off-site, shall be performed off-site.
4. Prior to generating construction waste, submit the project specific Plan for approval by the Consultant and provide monthly written reports on the progress of the Plan.
5. Upon approval of the Plan by the Consultant, it shall be implemented for the duration of the project.
6. Any money received by the Contractor for materials received, sold or reused off site was considered when the Bid Proposal was 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.

b) The Plan shall include, but not be limited to, the following components:
1. A list of the waste materials from the Project that will be targeted for reuse, salvage, or recycling. The following materials as applicable to the project, shall be accounted for (materials that will not be recycled shall be indicated as such):
    i) Cardboard, paper, packaging
    ii) Acoustical ceiling tiles
    iii) Clean dimensional wood, pallet wood
    iv) Beverage containers (plastic, glass, metal)
    v) Land clearing debris
    vi) Concrete
    vii) Stone
    viii) Concrete masonry units (CMU)
    ix) Asphalt

x) Metals, such as from banding, stud trim, ductwork, piping, rebar, roofing, windows, other trim, steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze
xi) Gypsum board
xii) Carpet and pad
xiii) Paint
xiv) Asphalt roofing shingles if applicable for any existing building demolition
xv) Rigid foam
xvi) Plastic film (i.e. shrink wrap)
xvii) Glass
xviii) Plastics
xix) Woods
xx) Brick
xxi) Other materials required by regulations and/or requested by the Client

2. Providing a description of the proposed means of waste management, including collection, sorting and transporting the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site for off-site sorting).
3. If the waste management work is assigned in whole or part to a subcontractor, vendor or other entity, provide a description of who does what from the point of creation during the project to the point of its final disposition off the site of the project.
4. Provide an estimate of packaging materials generated, and note whether suppliers will eliminate or take back packaging at the time of delivery.
5. Provide the name and address of the landfill(s) where trash will be disposed of and the applicable tipping fee(s).
6. Provide the name and address of the recycling facilities(s) where materials will be sent for recycling, how it will be recycled, and the applicable fee(s) paid or payment(s) received.
7. Include any additional information deemed relevant to describe the scope and intent of the Plan to the Client.
8. 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 reused or the Campus' signed receipt of materials or equipment, and the applicable fee(s) paid or payment(s) received.

c) In conjunction with payment applications, submit a monthly Waste Management report. This report shall include copies of waste receipts for the payment period and a completed Waste Management Form for the same payment period in PDF, paper and Excel formats.

d) Calculations and supporting documentation to demonstrate end-of-project recycling rates meeting the requirements of the Construction Waste Management Plan. The process for recording and assembling documentation shall be as follows:

1. Record and document the total weight (in tons) of all demolition and construction waste materials sent to the landfill/waste-to-energy facility. The Waste Management Reporting Forms shall be used as the basis for determining the total amount of waste landfilled for the project. The monthly reporting forms shall specify:
    i) The number of dumpsters or other containers sent to the landfill for that month.
    ii) The volume (in cubic yards) of each dumpster or container sent to the landfill for that month.
    iii) The type of waste contained in each dumpster or container.
    iv) The weight of the waste in each dumpster or container. If the weight of the waste is not directly measured for each dumpster or container, the following Solid Waste Conversion Factors shall be used to convert the volume of waste to weight:

Solid Waste Conversion Factors

Mixed Waste	350 lbs/cubic yard
Wood	300 lbs/cubic yard
Cardboard	100 lbs/cubic yard
Gypsum board	500 lbs/cubic yard
Rubble	1,400 lbs/cubic yard
Steel	1,000 lbs/cubic yard

v) In addition, provide the name of the landfill that will be accepting the materials. Receipts or other equivalent proof of facility reception of materials is required.

2. Record and document the total weight (in tons) of all demolition and construction waste materials recycled or salvaged. Entered responses should be numerical with up to three decimal places. Please refer to the conversion factors above for guidance in converting materials to tons. Visit this link for more information on conversion factors: https://www.epa.gov/sites/production/files/2016-04/documents/volume_to_weight_conversion_factors_memorandum_04192016_508fnl.pdf
Monthly Waste Management Reporting Forms shall be used as the basis for determining the total amount of waste recycled or salvaged for the project. The monthly reporting forms shall specify:
   i. The number of dumpsters or other containers of recycled or salvaged materials for that month.
   ii. The volume (in cubic yards) of each dumpster or container of recycled or salvaged materials for that month.
   iii. The type of recycled or salvaged material contained in each dumpster or container.
   iv. The weight of the recycled or salvaged material in each dumpster or container. If the weight of the material is not directly measured for each dumpster or container the Solid Waste Conversion Factors listed for landfill waste above shall be used, when applicable, to convert the volume of material to weight. For materials not contained in the Solid Waste Conversion Factors above, propose a conversion factor for review by the Client.
   v. In addition, provide the name of the receiving facilities/companies that will be purchasing or accepting the recycled or salvaged materials. Receipts or other proof of facility reception of materials is required.
   vi. For materials separated for recycling off-site, establish a method for tracking the weight of the recycled material. The method shall be included in the Plant for the Client to review and approve.
   vii. Summarize and show current progress to date in meeting the contract specific goal specified in paragraph 1 above.
3. Calculate the end-of-project recycling rate percentage by dividing the recycled and salvaged waste (in tons) by the total waste generated (recycled, salvaged, and landfilled waste- also in tons), and multiplying by 100.
4. For materials turned over to others for reuse, provide documentation on company letterhead indicating the material(s), the quantity (either by weight or units), the date and the intended reuse of the product.

e) During the work of the Project, provided all labor, containers, bins, dumpsters, and other equipment for the proper removal of all waste, non-returned surplus materials, and rubbish (any construction materials not recycled or composted) from the site in accordance with the Plan. Oversee and document the results of the Plan. Monitor the collecting, sorting, and depositing of all waste, non-returned surplus materials, and rubbish, in designated areas as per the Plan.
1. Locations for removal containers, bins and dumpsters shall be coordinated with the Client. Relocated containers, bins and dumpsters as needed to suit the field conditions during the work.
2. Provide periodic on-site instruction to workers regarding the appropriate separation, handling and recycling, salvage, reuse and return methods to be used by all parties in appropriate stages of the Project.
3. Allow for and lay out a specific area(s) to facilitate separation of materials for potential recycling, salvage, reuse and return. Each potential material shall be collected and stored to avoid being mixed with other materials. Recycling and waste bins areas are to be kept neat and clean, and clearly marked. Relocated area(s) as needed to suit the field conditions during the work.

f) 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.

28. Operating Instructions and Manuals

The Contractor shall furnish two (2) complete sets and one electronic copy of operating instructions and manuals which shall include definite and specific instructions on all mechanical, electrical, plumbing, fire safety, architectural systems, etc involved in the Project. Said instructions and manuals should set forth: (a) the manner of operation; (b) the necessary precautions and care to be followed: (c) periodic prevention maintenance requirements; and (d) a complete set of spare parts lists, catalogs, service manuals and manufacturing data on said systems. Said instructions and manuals are to be made available by the Contractor for review and comment by the University/Consultant a minimum of six (6) weeks prior to the scheduled completion of the Project.

29. As-Built Drawings

The General Contractor shall furnish two (2) complete copies and one electronic copy of as-built drawings which reflect post-construction site conditions upon completion of the project. As-built drawings shall be submitted to the University's Project Manager no later than six (6) weeks after completion of the project.

30. Hazardous Materials

a. Shipment and delivery of all products containing hazardous material must be in compliance with all regulatory agency's rules regulations, and laws.

b. The contractor shall post MSDS (Material Safety Data Sheet) for all chemicals, solvents, and materials specified or proposed to be used on this project in a conspicuous location on the job site.

c. The contractor shall comply with the University's policy on the application of pesticides and other chemicals on University property. All pesticides and chemicals intended for use on University Property shall be approved by the University before use.

31. U.S. Steel

All structural steel, reinforcing steel, or other major steel items to be incorporated in the work shall, if this Contract is in excess of $100,000, be produced or made in whole or substantial part in the United States, its territories or possessions.

32. Non-Asbestos Products

a. All materials specified herein shall contain no asbestos.

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.

33. Building Permit/Code Compliance

a. The University, if required by law, will issue all Building Permits for work on University owned property.

b. 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 University/Consultant.

34. Coordination with Other Contracts

There may be other contracts let for work to be done in adjacent areas and, as such, the Contractors and such other contractors shall coordinate their work to conform with 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. The General Constructor will be responsible for all of the coordination between all subcontractors and the University seating installer.

35. Asbestos

If the work to be done under this contract contains the abatement of asbestos the following shall apply:

a. Applicable Regulations -All work to be done under this Contract shall be in compliance with Part 56 of Title 12 of the Official Compilation of Codes, Rules and Regulations of the State of New York (cited as 12 NYCRR Part 56) as amended effective November 9, 1994.

b. Applicable Variance -The abatement contractor is responsible for obtaining any variance not issued to date that he feels may be applicable to the policies/procedures as set forth in 12 NYCRR Part 56.

c. Owner Project Fact Sheet -The Contractor shall complete and submit as much information as possible on the Asbestos Material Fact Sheet to the University in triplicate prior to the project startup. completion of the Fact Sheet shall be submitted prior to acceptance.

d. Patent Infringement -The State University of New York and the State University Construction Fund have been given notice by a law firm representing GPAC, Inc. that the use of its process/procedure for asbestos containment and removal constitutes a patent infringement. All potential contractors are hereby notified that they may have to obtain a license to use certain patented Negative Air Containment systems, and that any liability of the University in connection therewith is covered by Section 2.21 of the Agreement. Therefore, all potential contractors are hereby notified that after opening of the bids they must advise the University as to the system they intend to use for Negative Air Containment and provide the University with either a copy of their license to use the same or written documentation, signed by an authorized officer of their surety, that their performance bond guarantees the Contractor's indemnification covering patent claims.

e. Air Monitoring - All work to be done under this Contract shall be in compliance with Part 56 of Title 12 of the Official Compilation of Codes, Rules and Regulations of the State of New York (cited as 12 NYCRR Part 56), as currently amended, and applicable federal and state regulations.

The Owner shall be responsible for hiring and paying an independent third party firm to perform the requirements of air monitoring as called for in 12 NYCRR Part 56 and as permitted in Section 2.17 of the Agreement.

f. 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.

g. Disposal Procedures -It is the responsibility of the asbestos contractor to determine current waste handling, transportation and disposal regulations for the work site and for each waste disposal landfill. The asbestos contractor must comply fully with these regulations, all appropriate U.S. Department of Transportation, EPA and Federal, State and local entities' regulations, and all other then current legal requirements. Submit originals or copies of all pertinent manifests in triplicate to the University.

h. Submittals - Prior to commencement of the work on this project, the Contractor must submit the following to the University:

1). Copy of original insurance policy.

2). Copy of Department of Labor notification.

3). Owner Fact Sheet.

4). Copy of EPA notification.

i. Special Requirements -. 1) Size, location, and quantities of all pipes, joints, ducts, valves, tees, etc. must be field verified by all prospective bidders. Information given on the drawings and specifications is for general orientation and information only.

2) The Contractor shall have at least one English-speaking supervisor on the job site at all times while the project is in progress.

3) Prior to the commencement of work involving asbestos demolition, removal, renovation, the Contractor must submit to the University the name of its on-site asbestos supervisor responsible for such operations, together with documentation that such supervisor has completed an Environmental Protection Agency-approved training course for asbestos supervisors.

36. Sustainable Design Reporting (Applicable only when the submission is required by the technical specifications.

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.

37. NYS Buy Clean Concrete Guidelines

Use of low embodied carbon concrete
Contractors and subcontractors must comply with all applicable New York State laws and policies regarding use and documentation/certification of low embodied carbon concrete. This includes, but is not limited to: New York State Executive Order 22 (2022), and the Buy Clean Concrete guidelines issued in 2023 pursuant to State Finance Law 136-d*2 "Contracts involving low embodied carbon concrete".

Environmental Product Declarations
Starting Jan. 1, 2025, Environmental Product Declarations must be submitted to the contract/proje manager for all proposed concrete mixes.

38. Wage Rates and Supplements

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

Wage Schedules can be accessed online using PRC # 2025014717 at https://apps.labor.ny.gov/wpp/publicViewProject.do?method=showIt&id=1600407 If the Contractor is unable to access the prevailing wage schedule for the PRC# listed above, please contact the University for a copy of the wage rate schedule.

SECTION D – Supplementary Special Conditions

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1. KEY POLICY

To obtain keys the Contractor-shall present:

- Company identification (business card)
- Driver's License or acceptable picture identification
- Local phone number of company and personal phone number
- Description of job and date of completion
- Co-signature of University Project Manager who hired Contractor
- Completed University supplied "Key Agreement/Receipt" Card.

Keys not returned within the agreed upon time frame, shall be presumed lost and the cost of rekeying the door, suite, floor or building shall be charged to the Contractor and deducted from any money owed the Contractor.

If the re-keying cost exceeds the remaining funds, a bill for the remainder shall be sent to the contractor. All unpaid bills will be turned over to the State Attorney General's Office for collection.

The Project shall not be considered complete or final payment made until building keys are returned.

2. DIESEL EMISSIONS REDUCTION ACT OF 2006:

The 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. At the completion of the contract with the final payment request and for active projects, annually, but no later than March 1st, the Contractor shall complete and submit directly to the University at Buffalo, 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: http://www.dec.ny.gov/chemical/4754.html for heavy duty vehicles used in the performance of this Contract for the preceding calendar year.

3. ARCHEOLOGICAL SURVEY – NOT APPLICABLE

4. ADDITIONAL INSURANCE REQUIREMENTS (see Agreement Section 5.06)

General Liability and Property Damage Insurance- Standard Insurance Certificates (ACORD forms) are acceptable proof of such coverage.

Contractor shall at all times, at its own expense, carry Workers Compensation and Disability insurances as required for New York State. New York State Workers Compensation Board Certificates are the only forms accepted by the State of New York for proof of such coverage.

New York State Workers Compensation Law, Sections 57 and 220, requires State Agencies to ensure, PRIOR to entering into any contract (including POs), that the intended vendor has appropriate NYS workers compensation and disability insurance coverage. A vendor's insurance carrier must provide the vendor with copies of the correct, completed New York State forms to present to the State Agency purchasing agent AND must submit these forms

(annually) to the Workers Comp Board so they can be properly recorded. State agencies are prohibited from issuing purchase orders/contracts until the proper forms have been received and verified.

Per the requirements of the law, **ONE** of the following NYS forms is required as proof of **Workers Compensation** coverage:
C-105.2 (if using a private insurance carrier) OR **U-26.3** (if insured through the NYS Insurance Fund) OR **SI-12** or **GSI-105.2** (if self-insured).

In addition, **ONE** of the following forms is required as proof of **Disability** coverage:
DB-120.1 (if using a private insurance carrier) OR **DB-155** (if you are self insured).

5. CHANGE ORDERS

All changes to the contract must be by written change order from the University's Project Manager before any work has begun. If work is started before approval is granted, the University is not liable for payments on work rendered.

6. CONTRACTOR IDENTIFICATION

At all times all Contractors personnel shall be required to furnish upon request clearly identifying proof that they are an employee or agent of the Contractor/Subcontractor when on University premises.

7. SILENCE OF SPECIFICATIONS

The apparent silence of this specification and any supplemental specifications as to any details or the omission from it of a detailed description concerning any point shall be regarded as meaning that only the best commercial/professional practices are to prevail and that only materials of first quality and correct type, size and design are to be used. All interpretations of the specification shall be made upon the basis of this statement.

8. ADHERANCE TO ALL APPLICABLE LAWS AND REGULATIONS

The Contractor shall comply with any and all applicable law and regulations. This shall include but is not limited to complying with NYSDOL, OSHA, State Fire Code, OFPC, NFPA, DEC, and EPA regulations.

9. LABORATORY TESTING SERVICES

The listing of such tests in the technical specifications is for the Contractor's convenience only and in no way restricts the University/Consultant's and the University's right to all other testing and inspection in accordance with Article II of the Agreement and to vary the amounts and types of testing at any time before or during the progress of the work

10. SNOW REMOVAL

The University will normally remove snow from existing site access roads, parking lots and main entrances to buildings. The contractor shall remove snow from his storage areas, staging areas, temporary office area, work area, construction roads, and any other areas required for the execution of his work.

11. REQUESTS FOR INFORMATION

In the event that the Contractor believes that some portion of the Drawings and Project Manual for the project requires clarification or interpretation by the Consultant per Section 2.01 of the Agreement, the Contractor shall submit a Request for Information (RFI) in writing to the Consultant. The Contractor shall define the issue which requires clarification or interpretation in clear and concise language as follows:

a. The General 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 RFI's.

b. Forms should include provisions for the Consultant 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 with the building, by room number, name and nearest columns.

d. The Contractors shall confirm that reasonable locations for the information required has been reviewed and has documented those locations by specific references to the Drawings and Project Manual on the RFI.

e. The Contractors shall review the RFI for systemic or global implications, including review of other pending RFI's, so that the final RFI submitted represents a reasonable consolidation of similar requests.

f. The General Contractor shall coordinate and review all RFI's including 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.

g. Contractors to coordinate response from the University with subcontractors.

h. The RFI shall contain a description of what the Contractor believes to be the intent of the design document, with due regard to Section 1.06 of the Agreement, along with reasons why the RFI is required.

i. RFI's shall only be submitted on the approved forms.

j. RFI's which do not comply with the above requirements will be returned to the Contractor for revision and resubmission.

k. The Consultant will review all RFI's to determine whether they are RFI's 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.

l. The Consultant will respond to all RFI's within ten (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 within ten (10) business days of its original receipt and indicate when the response will be completed.

12. PRODUCTS

All products shall be new, guaranteed against faulty workmanship 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. All materials supplied shall be industrial and/or commercial grade, whichever is compatible and in accordance with the best standards of the industry unless expressly noted otherwise.

13. RIGGING

Booms, cranes, extensions, etc. shall be restricted to swing within the contract limit lines shown at all times. All mobile crane setups shall be preceded by a call to Dig Safely at 811 to ensure that they are not set up over shallow utility lines. The Contractor shall submit rigging plans including safety plans to the University's Project Manager prior to having rigging equipment delivered to the site.

14. UNIVERSITY WIDE SMOKE-FREE POLICY

The University at Buffalo supports an environment where its students, employees, and visitors are not exposed to secondhand smoke. Therefore, smoking is prohibited on all University-managed property, both indoors and outdoors. This includes but is not limited to:

- All buildings on the North, South, and Downtown campuses, classrooms, lecture halls, residences, residence halls, apartments, laboratories, offices, work areas, study areas, reception areas, meeting rooms, lobbies, hallways, stairwells, elevators, eating areas, lounges, and restrooms.

- Off-site locations such as the Anderson Gallery, UB Downtown Gateway, Educational Opportunity Center, Ira G. Ross Eye Institute, Jacobs Executive Development Center, and Baird research Park.

- Fields, open land areas, parking lots and garages, athletic fields, tracks, bleachers/grandstands, outdoor paths, and roads.

- All partially enclosed areas including, but not limited to, covered and uncovered walkways, breezeways, bus stop shelters, loading docks, building entrances, and exterior stairways and landings.

- All vehicles owned and leased by the University at Buffalo or its affiliated organizations.

End of General Requirements Section

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Phased construction.
4. Work performed by Owner.
5. Owner-furnished/Contractor-installed (OFCI) products.
6. Owner-furnished/Owner-installed (OFOI) products.
7. Contractor-furnished/Owner-installed (CFOI) products.
8. Coordination with occupants.
9. Specification and Drawing conventions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.
2. Section 017300 "Execution" for coordination of Owner-installed products.

1.2 DEFINITIONS

A. Work Package: A group of specifications, drawings, and schedules prepared by the design team to describe a portion of the Project Work for pricing, permitting, and construction.

1.3 PROJECT INFORMATION

A. Project Identification: SUNY 2025-088 Renovate Labs Furnas 913, 914 Disciplinary Excellence.

1. Project Location: University at Buffalo, North Campus, Buffalo, NY 14260.

B. Owner: SUNY University at Buffalo.

1. Owner's Representative: Joe D'Errico, LEED BD+C, 716-344-7058 or jderrico@buffalo.edu

C. Architect: Kideney Architects, P.C..

1. Architect's Representative: Yadira D. DeSantis, AIA, NCARB, 716-249-3837 or ydesantis@kideney.com.

D. Architect's Consultants: Architect has retained the following design professionals, who have prepared designated portions of the Contract Documents:

1. Fire Protection, Plumbing, Mechanical, and Electrical: Ram Tech Engineers, P.C..

a. FP/P/M/E Representative: Timothy Myers, PE, LEED AP, 315-463-7716 or t.myers@ramtechengineers.com.

E. Project Coordinator for Multiple Contracts: “Owner shall serve as Project Coordinator.”

F. Web-Based Project Software: Project software will be used for purposes of managing communication and documents during the construction stage.

1. See Section 013100 "Project Management and Coordination" for requirements for using web-based Project software.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:

1. This project will encompass the renovation of approximately 6,450 gross square feet of interior space on the ninth floor of Furnas Hall for the School of Engineering and Applied Sciences. This renovation will include new chemistry lab suites and student work areas. The laboratories will include lab benches, fume hoods, cell culture rooms, a freezer room, microscopy rooms, a cold room, storage and a shared equipment room. The student work rooms will be left empty for client FF&E packages. Full architectural, mechanical, electrical, plumbing, and fire protection work will be required. Work within core support spaces such as the service corridor, mechanical room, and rooftop are included in the scope.

B. Type of Contract:

1. Project will be constructed under coordinated, concurrent multiple contracts. See Section 011200 "Multiple Contract Summary" for a list of multiple contracts, a description of work included under each of the multiple contracts, and the responsibilities of Project coordinator.

C. Before commencing Work of each phase, submit an updated copy of Contractor's construction schedule, showing the sequence, commencement and completion dates, and move-out and -in dates of Owner's personnel for all phases of the Work.

1.5 WORK PERFORMED BY OWNER

A. Cooperate fully with Owner, so work may be carried out smoothly, without interfering with or delaying Work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

B. Subsequent Work: Owner will perform the following additional work at site after Substantial Completion. Completion of that work will depend on successful completion of preparatory Work under this Contract.

1. Existing IT equipment moved to new data rack.

1.6 OWNER-FURNISHED/CONTRACTOR-INSTALLED (OFCI) PRODUCTS

A. Owner's Responsibilities: Owner will furnish products indicated and perform the following, as applicable:

1. Provide for delivery of Owner-furnished products to Project site.
2. Upon delivery, inspect, with Contractor present, delivered items.

a. If Owner-furnished products are damaged, defective, or missing, arrange for replacement.

3. Obtain manufacturer's inspections, service, and warranties.
4. Inform Contractor of earliest available delivery date for Owner-furnished products.

B. Contractor's Responsibilities: The Work includes the following, as applicable:

1. Designate delivery dates of Owner-furnished products in Contractor's construction schedule, utilizing Owner-furnished earliest available delivery dates.
2. Receive, unload, handle, store, protect, and install Owner-furnished products.
3. Make building services connections for Owner-furnished products.
4. Protect Owner-furnished products from damage during storage, handling, and installation and prior to Substantial Completion.
5. Repair or replace Owner-furnished products damaged following receipt.

1.7 OWNER-FURNISHED/OWNER-INSTALLED (OFOI) PRODUCTS

A. The Owner will furnish and install products indicated.

1.8 CONTRACTOR-FURNISHED/OWNER-INSTALLED (CFOI) PRODUCTS

A. Contractor shall furnish products indicated. The Work includes unloading, handling, storing, and protecting Contractor-furnished products as directed and turning them over to Owner at Project closeout.

1.9 COORDINATION WITH OCCUPANTS

A. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits unless otherwise indicated.

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
2. Provide not less than 120 hours' notice to Owner of activities that will affect Owner's operations.

1.10 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes a summary of each contract, including responsibilities for coordination and temporary facilities and controls.

B. Specific requirements for Work of each contract are also indicated in individual Specification Sections and on Drawings.

C. Related Requirements:

1. Section 011000 "Summary" for the Work covered by the Contract Documents, restrictions on use of Project site, coordination with occupants, and work restrictions.
2. Section 013100 "Project Management and Coordination" for general coordination requirements.

1.2 DEFINITIONS

A. Permanent Enclosure: As determined by Architect, the condition at which roofing is insulated and weathertight; exterior walls are insulated and weathertight; and openings are closed with permanent construction or substantial temporary closures equivalent in weather protection to permanent construction.

1.3 PROJECT COORDINATOR

A. Project coordinator (owner) shall be responsible for coordination between the General Construction Contract Plumbing Contract HVAC Contract Electrical Contract to the extent indicated in Division 01000 General Requirements.

1.4 CONTRACTOR RESPONSIBILITIES

A. Each Contract shall perform Project coordination activities for their contract work, including, but not limited to, the following:

1. Provide typical overall coordination of the Work.
2. Coordinate shared access to workspaces.
3. Coordinate product selections for compatibility.
4. Provide overall coordination of temporary facilities and controls.
5. Coordinate, schedule, and approve interruptions of permanent and temporary utilities, including those necessary to make connections for temporary services.
6. Coordinate construction and operations of the Work with work performed by each Contract.

7. Prepare coordination drawings in collaboration with each contractor to coordinate work by more than one contract.
8. Coordinate sequencing and scheduling of the Work. Include the following:

    a. Initial Coordination Meeting: At earliest possible date, arrange and conduct a meeting with contractors for sequencing and coordinating the Work; negotiate reasonable adjustments to schedules.
    b. Prepare combined Contractors' Construction Schedule for entire Project. Base schedule on preliminary construction schedule. Secure time commitments for performing critical construction activities from contractors. Show activities of each contract on a separate sheet. Prepare a simplified summary sheet indicating combined construction activities of contracts.

        1) Submit schedules for approval.
        2) Distribute copies of approved schedules to contractors.

9. Provide quality-assurance and quality-control services specified in Section 014000 "Quality Requirements."
10. Coordinate sequence of activities to accommodate tests and inspections, and coordinate schedule of tests and inspections.
11. Provide information necessary to adjust, move, or relocate existing utility structures affected by construction.
12. Locate existing permanent benchmarks, control points, and similar reference points, and establish permanent benchmarks on Project site.
13. Provide field surveys of in-progress construction and site work.
14. Provide progress cleaning of common areas and coordinate progress cleaning of areas or pieces of equipment where more than one contractor has worked.
15. Coordinate cutting and patching.
16. Coordinate protection of the Work.
17. Coordinate firestopping.
18. Coordinate completion of interrelated punch list items.
19. Coordinate preparation of Project Record Documents if information from more than one contractor is to be integrated with information from other contractors to form one combined record.
20. Print and submit Record Documents if installations by more than one contractor are indicated on the same Contract Drawing or Shop Drawing.
21. Collect record Specification Sections from contractors, collate Sections into numeric order, and submit complete set.
22. Coordinate preparation of operation and maintenance manuals if information from more than one contractor is to be integrated with information from other contractors to form one combined record.

B. Responsibilities of each contractor for temporary facilities and controls include, but are not limited to, the following:

    1. Refer to General Conditions Specification Section 01000.

1.5 GENERAL REQUIREMENTS OF CONTRACTS

A. Extent of Contract: Unless the Agreement contains a more specific description of the Work of each Contract, requirements indicated on Drawings and in Specification Sections determine which contract includes a specific element of Project.

1. Unless otherwise indicated, the work described in this Section for each contract shall be complete systems and assemblies, including products, components, accessories, and installation required by the Contract Documents.
2. Trenches and other excavation for the work of each contract shall be the work of each contract for its own work.
3. Blocking, backing panels, sleeves, and metal fabrication supports for the work of each contract shall be the work of each contract for its own work.
4. Furnishing of access panels for the work of each contract shall be the work of each contract for its own work. Installation of access panels shall be the work of the General Construction Contract.
5. Equipment pads for the work of each contract shall be the work of the General Construction Contract.
6. Roof-mounted equipment curbs installation for the work of each contract shall be the work of the General Construction Contract.
7. Painting for the work of each contract shall be the work of each contract for its own work
8. Cutting and Patching: Provided under each contract for its own work. Through-penetration firestopping for the work of each contract shall be provided by each contract for its own work.
9. Contractors' Startup Construction Schedule: Within five working days after startup horizontal bar-chart-type construction schedule and preliminary network diagram submittal has been received from each contractor , submit a matching startup horizontal bar-chart schedule and startup network diagram showing construction operations sequenced and coordinated with overall construction.

B. Substitutions: Each contractor shall cooperate with other contractors involved to coordinate approved substitutions with remainder of the work.

1. Each contract shall coordinate substitutions.

C. Temporary Facilities and Controls: In addition to specific responsibilities for temporary facilities and controls indicated in this Section and in Section 015000 "Temporary Facilities and Controls," each contractor is responsible for the following:

1. Installation, operation, maintenance, and removal of each temporary facility necessary for its own normal construction activity, and costs and use charges associated with each facility, except as otherwise provided for in this Section.
2. Plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
3. Its own field office, complete with necessary furniture, utilities, and telephone service.
4. Its own storage and fabrication sheds.
5. Temporary enclosures for its own construction activities.
6. Staging and scaffolding for its own construction activities.

7. General hoisting facilities for its own construction activities, up to 2 tons.
8. Waste disposal facilities, including collection and legal disposal of its own hazardous, dangerous, unsanitary, or other harmful waste materials.
9. Progress cleaning of work areas affected by its operations on a daily basis.
10. Secure lockup of its own tools, materials, and equipment.
11. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.

D. Temporary Heating, Cooling, and Ventilation: The General Construction Contract is responsible for temporary heating, cooling, and ventilation before weathertight enclosure of building is complete. The General Construction Contract is responsible for temporary heating, cooling, and ventilation after permanent enclosure of building is complete and Owner will pay utility-use charges.

1.6 GENERAL CONSTRUCTION CONTRACT

A. Work of the General Construction Contract includes, but is not limited to, the following:

1. Remaining work not identified as work under other contracts.
2. Site preparation, including clearing, building demolition and relocations, and earthwork.
3. Site improvements, including roadways, parking lots, pedestrian paving, site development furnishings and equipment, and landscaping.
4. Tunnels for site utilities.
5. Selective demolition.
6. Foundations, including footings, foundation walls.
7. Slabs-on-grade, including earthwork, subdrainage systems, and insulation.
8. Below-grade building construction, including excavation, backfill, and insulation and waterproofing/dampproofing.
9. Superstructure, including floor and roof construction and sprayed fire-resistive materials and board fire protection.
10. Exterior closure, including walls, doors, windows.
11. Roofing, including roof insulation, coverings, flashings roof accessories.
12. Interior construction, including partitions, doors, interior glazed openings, and fittings.
13. Fire-protection specialties.
14. Interior finishes finish carpentry interior specialties, and floor and ceiling finishes.
15. Miscellaneous items, including concrete equipment bases and painting of mechanical and electrical work.
16. Equipment, including the following:

    a. Laboratory fume hoods.

17. Furnishings, including casework, window treatments.

B. Temporary facilities and controls in the General Construction Contract include, but are not limited to, the following:

pTemporary facilities and controls that are not otherwise specifically assigned to the Plumbing Contract HVAC Contract.

1. Sediment and erosion control.
2. Unpiped sewers and drainage, including drainage ditches, dry wells, stabilization ponds, and containers.
3. Stormwater control.
4. Unpiped temporary toilet fixtures, wash facilities, and drinking water facilities, including disposable supplies.
5. Temporary enclosure for building exterior, except as indicated.
6. Temporary roads and paved areas.
7. Dewatering facilities and drains.
8. Excavation support and protection, unless required solely for the Work of another contract.
9. Special or unusual hoisting requirements for construction activities, including hoisting loads in excess of 2 tons, hoisting material or equipment into spaces below grade, and hoisting requirements outside building enclosure.
10. Project identification and temporary signs.
11. General waste disposal facilities.
12. Pest control.
13. Temporary fire-protection facilities.
14. Barricades, warning signs, and lights.
15. Site enclosure fence.
16. Covered walkways.
17. Security enclosure and lockup.
18. Environmental protection.
19. Maintenance and restoration of Owner's existing facilities used as temporary facilities.

1.7 PLUMBING CONTRACT

A. Work of the Plumbing Contract includes, but is not limited to, the following:

1. Site water supply and distribution.
2. Site sanitary sewerage.
3. Site storm drainage.
4. Site fuel distribution.
5. Site special plumbing systems.
6. Plumbing fixtures.
7. Domestic water distribution.
8. Sanitary waste.
9. Stormwater drainage.
10. Fire-suppression systems.
11. Plumbing connections to equipment furnished by the General Construction Contract Plumbing Contract.

B. Temporary facilities and controls in the Plumbing Contract include, but are not limited to, the following:

1. Piped sewerage and drainage.
2. Piped gas service.
3. Piped water service.
4. Piped temporary toilet fixtures, wash facilities, and drinking water facilities.
5. Plumbing connections to existing systems and temporary facilities and controls furnished by the Plumbing Contract.

1.8 HVAC CONTRACT

A. Work of the HVAC Contract includes, but is not limited to, the following:

1. Site steam distribution.
2. Site hydronic distribution.
3. Energy supply, including hot- and chilled-water supply systems.
4. HVAC systems and equipment.
5. HVAC instrumentation and controls.
6. HVAC testing, adjusting, and balancing.
7. Building automation system.
8. Mechanical connections to equipment furnished by the General Construction Contract HVAC Contract.

1.9 ELECTRICAL CONTRACT

A. Work of the Electrical Contract includes, but is not limited to, the following:

1. Site electrical distribution.
2. Site lighting.
3. Site communications and security.
4. Electrical service and distribution.
5. Exterior and interior lighting.Communication and security.
6. Special electrical systems, including the following:

    a. Uninterruptible power supply systems.
    b. Packaged engine generator systems.
    c. Battery power systems.
    d. Cathodic protection.
    e. Electromagnetic shielding systems.
    f. Lightning protection systems.
    g. Unit power conditioners.
    h. Power generation systems.

7. Electrical connections to equipment furnished by the General Construction Contract HVAC Contract Electrical Contract.

B. Temporary facilities and controls in the Electrical Contract include, but are not limited to, the following:

1. Electric power service and distribution.

2. Lighting, including site lighting.
3. Electrical connections to existing systems and temporary facilities and controls furnished by the General Construction Contract HVAC Contract Electrical Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011200

Division 011200: Specification Responsibility Matrix									11/12/2025
	SUNY 2025-088 - Renovate Labs Furnas 913, 914 Disciplinary Excellence X = Primary Responsibility	Site Work	General Trades	Mechanical	Plumbing	Electrical	Roofing (HS and ECC)	Roof (ES and MS)	Roofing (All Buildings)
Spec #	Spec Name	BP-01	BP-02	BP-03	BP-04	BP-05	BP-06	BP-07	BP-08
Section 011200	Multiple Contract Summary	X	X	X	X	X	X	X	X
Section 011300	NYSED 155.5 Regulations	X	X	X	X	X	X	X	X
Section 012100	Allowances	X	X	X	X	X	X	X	X
Section 012200	Unit Prices	X	X	X	X	X	X	X	X
Section 012300	Alternates	X	X	X	X	X	X	X	X
Section 012900	Payment Procedures	X	X	X	X	X	X	X	X
Section 013100	Project Management and Coordination	X	X	X	X	X	X	X	X
Section 013200	Construction Progress Documentation	X	X	X	X	X	X	X	X
Section 013233	Photographic Documentation	X	X	X	X	X	X	X	X
Section 013300	Submittal Procedures	X	X	X	X	X	X	X	X
Section 013300a	Submittal Cover	X	X	X	X	X	X	X	X
Section 013300b	Contractor's Certification Letter	X	X	X	X	X	X	X	X
Section 013573	Delegated Design Procedures	X	X	X	X	X	X	X	X
Section 013591	Historic Treatment Procedure	X	X	X	X	X	X	X	X
Section 014000	Quality Requirements	X	X	X	X	X	X	X	X
Section 014100.0	Special Inspections and Testing - IBC 2018	X	X	X	X	X	X	X	X
Section 014200	References	X	X	X	X	X	X	X	X
Section 15000	Temporary Facilities and Controls	X	X	X	X	X	X	X	X
Section 015719	Temporary Environment Controls	X	X	X	X	X	X	X	X
Section 016000.0	Product Requirements	X	X	X	X	X	X	X	X
Section 017300	Execution	X	X	X	X	X	X	X	X
Section 017329	Cutting and Patching	X	X	X	X	X	X	X	X
Section 017419.0	Construction Waste Management and Disposal	X	X	X	X	X	X	X	X
Section 017700	Closeout Procedures	X	X	X	X	X	X	X	X
Section 017823	Operation and Maintenance Data	X	X	X	X	X	X	X	X
Section 017839	Project Record Documents	X	X	X	X	X	X	X	X
Section 017900	Demonstration and Training	X	X	X	X	X	X	X	X
Section 023000	Subsurface Investigations	X	X			X			
Section 024113	Selective Site Demolition	X	X			X			
Section 024119	Selective Structure Demolition		X	X	X	X	X	X	X
Section 028214	Asbestos Abatement		X - All Abatement (Excluding Abatement for Roofing Removals/ Replacements)				Abatement Associated with Roofing Removals/ Replacements	Abatement Associated with Roofing Removals/ Replacements	Abatement Associated with Roofing Removals/ Replacements
Section 028333	Removal of Materials Containing Lead		X	For Attachments to Existing Components Containing Lead					
Section 030130	Maintenance of Cast-In-Place Concrete		X						
Section 033000	Cast-In-Place Concrete	As it relates to Site Work Foundations noted in scope	X	Interior Housekeeping Pads Only	Interior Housekeeping Pads Only	Interior Housekeeping Pads, Light Standard and Scoreboard Foundations			
Section 033540	Concrete Densifier-Sealer Treatment		X						
Section 033543	Polished Concrete Finishing		X						

Division 011200: Specification Responsibility Matrix									11/12/2025
	SUNY 2025-088 - Renovate Labs Furnas 913, 914 Disciplinary Excellence X = Primary Responsibility	Site Work	General Trades	Mechanical	Plumbing	Electrical	Roofing (HS and ECC)	Roof (ES and MS)	Roofing (All Buildings)
Spec #	Spec Name	BP-01	BP-02	BP-03	BP-04	BP-05	BP-06	BP-07	BP-08
Section 042000	Unit Masonry		X				For Roofing Thruwall Flashing Install	For Roofing Thruwall Flashing Install	For Roofing Thruwall Flashing Install
Section 053100	Steel Decking		X	For any infills required for mechanical work					
Section 055000	Metal Fabrications	For Exterior Bollards	For All Lintels, Support Steel for OH Doors	For Misc. Framing for Mechanical Unit Support			For Metal Ladders	For Metal Ladders	For Metal Ladders
Section 061053	Miscellaneous Rough Carpentry		X	As It Relates to this Contract Scope of Work	As It Relates to this Contract Scope of Work	As It Relates to this Contract Scope of Work	As It Relates to this Contract Scope of Work	As It Relates to this Contract Scope of Work	As It Relates to this Contract Scope of Work
Section 061600	Sheathing		X						
Section 061753	Shop Fabricated Wood Trusses		X						
Section 064023	Interior Architectural Woodwork		X						
Section 070150.19	Preparation for Re-Roofing						X	X	X
Section 072100	Thermal Insulation		Includes Comfort Station complete and interior insulation (excludes roofing insulation)				All thermal insulation related to roofing (excluding Comfort Station)	All thermal insulation not related to roofing (excluding Comfort Station)	All thermal insulation not related to roofing (excluding Comfort Station)
Section 073133	Composite Rubber Shingles							X	X
Section 074113.16	Standing-Seam Metal Roof Panels		X						
Section 074213.19	Insulated Metal Wall Panels		X						
Section 074646	Fiber-Cement Siding		X						
Section 075323	Ethylene-Propylene-Diene-Monomer (EPDM) Roofing						X	X	X
Section 076200	Sheet Metal Flashing and Trim		As required for the Comfort Station				X	X	X
Section 077129	Manufactured Roof Expansion Joints		As required for the Comfort Station				X	X	X
Section 077200	Roofing Accessories		As required for the Comfort Station				X	X	X
Section 077253	Snow Guards		As required for the Comfort Station					X	X
Section 078413	Penetration Firestopping		X						
Section 079200	Joint Sealants	X	X	X	X	X	X	X	X
Section 079219	Acoustical Joint Sealants		X	For This Contracts Penetrations Only	For This Contracts Penetrations Only	For This Contracts Penetrations Only			
Section 080152.61	Wood Window Repairs		X						
Section 081213	Hollow Metal Frames		X						
Section 081416	Flush Wood Doors		X						
Section 081743	Integrated Composite Door Opening Assemblies		X						
Section 083113	Access Doors and Frames		X						
Section 083323	Overhead Coiling Doors		X						
Section 083483	Floor Doors		X						
Section 084113	Aluminum-Framed Entrances and Storefronts		X						
Section 084523	Fiberglass-Sandwich-Panel Assemblies		X						

Division 011200: Specification Responsibility Matrix									11/12/2025
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Spec #	Spec Name	BP-01	BP-02	BP-03	BP-04	BP-05	BP-06	BP-07	BP-08
Section 087100	Door Hardware		X			All Line and Low Voltage for Electrified Hardware			
Section 088000	Glazing		X						
Section 090121	Plaster Restoration		X						
Section 092216	Non-Structural Metal Framing		X						
Section 092900	Gypsum Board		X						
Section 093000	Tiling		X						
Section 095113	Acoustic Panel Ceilings		X						
Section 096513	Resilient Base and Accessories		X						
Section 096519	Resilient Tile Flooring		X						
Section 096723	Resinous Matrix Terrazzo Flooring		X						
Section 096813	Tile Carpeting		X						
Section 098413	Fixed Sound-Absorptive Panels		X						
Section 098433	Sound-Absorbing Wall Units		X						
Section 099113	Exterior Painting		X						
Section 099123	Interior Painting		X						
Section 099600	High-Performance Coatings		X						
Section 101100	Visual Display Boards		X						
Section 101400	Code Required Signage		X						
Section 101419	Dimensional Letter Signage		X						
Section 101423	Panel Signage		X						
Section 101453	Traffic Signage	X							
Section 102113.19	Plastic Toilet Compartments		X						
Section 102800	Toilet, Bath, and Laundry Accessories		X						
Section 105113	Metal Lockers		X						
Section 107500	Flagpoles	X							
Section 116833	Athletic Field Equipment	X							
Section 116843	Exterior Scoreboards					X			
Section 122413	Roller Window Shades		X						
Section 123661.16	Solid Surfacing Countertops		X						
Section 124813	Entrance Floor Mats and Frames		X						
Section 126100	Fixed Audience Seating		X						
Section 129300	Site Furnishings	X							
Section 133416	Permanent Grandstand Bleachers	X							
Section 133424	Pressbox	X							
Section 133425	Fabricated Pre-Engineered Structure		X						
Section 133427	Precast Pre-Engineered Dugout Structure	X							
Section 210500	Common Work Results for Fire Suppression			X					
Section 211000	Water-Based Fire Suppression Systems			X					
Section 220500	Common Work Results for Plumbing				X				
Section 220523.12	General Duty Valves				X				
Section 220529	Hangers and Supports for Plumbing Piping and Equipment				X				
Section 220553	Identification for Plumbing Equipment Insulation				X				
Section 220700	Plumbing Insulation				X				
Section 221116	Domestic Water Piping				X				
Section 221119	Domestic Water Piping Specialties				X				
Section 221316	Sanitary Waste, Storm, and Vent Piping				X				
Section 221319	Sanitary Waste and Storm Piping Specialties				X				
Section 224000	Plumbing Fixtures				X				
Section 230030	Electrical Requirements for Mechanical Equipment			X		X			
Section 230050	Basic Mechanical Materials and Methods			X					

Division 011200: Specification Responsibility Matrix									11/12/2025
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Spec #	Spec Name	BP-01	BP-02	BP-03	BP-04	BP-05	BP-06	BP-07	BP-08
Section 230500	Common Work Results for HVAC			X					
Section 230513	Common Motor Requirements for HVAC Equipment			X					
Section 230516	Expansion Fittings and Loops for HVAC Piping			X					
Section 230517	Sleeves and Sleeve Seals for HVAC Piping			X					
Section 230519	Meters and Gages for HVAC Piping			X					
Section 230523	General Duty Valves for HVAC Piping			X					
Section 230529	Hangers and Supports for HVAC Piping and Equipment			X					
Section 230593	Testing, Adjusting and Balancing for HVAC			X					
Section 230700	HVAC Insulation			X					
Section 230800	Comissioning of HVAC			X					
Section 230900	Instrumentation and Control for HVAC			X					
Section 230993	Sequence of Operations for HVAC Controls			X					
Section 232113	Hydronic Piping			X					
Section 232116	Hydronic Piping Specialties			X					
Section 232123	Hydronic Pumps			X					
Section 232213	Steam and Condensate Heating Piping			X					
Section 232116	Steam and Condensate Piping Specialties			X					
Section 233113	Metal Ducts			X					
Section 233300	Air Duct Accessories			X					
Section 233423	HVAC Power Ventilators			X					
Section 233713	Diffusers, Registers and Grilles			X					
Section 233723	HVAC Gravity Ventilators			X					
Section 235100	Breechings, Chimneys, and Stacks			X					
Section 235216	Condensing Boilers			X					
Section 235700	Heat Exchangers for HVAC			X					
Section 237313	Modular Indoor Central Station Air Handling Units			X					
Section 238223	Unit Ventilators			X					
Section 238239	Heating Terminal Unit			X					
Section 238416	Dehumidifers			X					
Section 260011	Selective Removals, Relocations, and Rearrangements					X			
Section 260500	Common Work Results for Electrical					X			
Section 260505	Electrical Inspections and Testing					X			
Section 260519	Low Voltage Electrical Power Conductors and Cables (100-600 Volts)					X			
Section 260526	Grounding and Bonding					X			
Section 260529	Hangers and Supports					X			
Section 260533	Raceways					X			
Section 260535	Boxes and Cabinets					X			
Section 260544	Sleeves and Sleeve Seals for Raceways and Cabling					X			
Section 260553	Electrical Identification					X			
Section 260575	Conduit Rough-In Systems					X			
Section 260578	Multi-Service Boxes and Assemblies					X			
Section 260923	Automatic Lighting Control Devices					X			
Section 262200	Low-Voltage Transformers					X			
Section 262416	Panelboards					X			
Section 262485	Contractors					X			
Section 262505	Laboratory General Purpose Plug-In Busway					X			
Section 262726	Wiring Devices					X			
Section 262800	Protective Devices					X			
Section 262913	Motor Controllers					X			
Section 265119	Interior Lighting - LED					X			
Section 265561	Theatrical Lighting					X			
Section 265668	Sport Lighting					X			

Division 011200: Specification Responsibility Matrix									11/12/2025
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Spec #	Spec Name	BP-01	BP-02	BP-03	BP-04	BP-05	BP-06	BP-07	BP-08
Section 270011	Selective Removals, Relocations, and Rearrangements					X			
Section 270500	Common Work Results for Communications					X			
Section 270767	Radio Assistive Listening Systems					X			
Section 274219	Digital Signage Systems					X			
Section 275124	Door Entry Audio-Visual Systems					X			
Section 280011	Selective Removals, Relocations, and Rearrangements					X			
Section 280500	Common Work Results for Electronic Safey and Security					X			
Section 283105	Fire Alarm System Extension					X			
Section 311000	Site Preparation	X							
Section 312000	Earth Moving	X							
Section 312100	Earth Moving for Buildings	X							
Section 312317	Site Trenching	X							
Section 312500	Erosion and Sediment Control	X							
Section 321216	Asphalt Paving	X							
Section 321219	Asphalt Pulverization	X							
Section 321313	Concrete Paving	X							
Section 321316	Decorative Concrete Paving	X							
Section 321613	Concrete Curbs	X							
Section 321723	Pavement Markings	X							
Section 321813	Synthetic Grass Surfacing	X							
Section 321820	Play Court Surfacing and Accessories	X							
Section 321823	Running Track Surfacing	X							
Section 321829	Clay Infields	X							
Section 323113	Chain Link Fences and Gates	X							
Section 329200	Turf and Grasses	X							
Section 329223	Sodding	X							
Section 329230	Athletic Field Construction	X							
Section 329300	Exterior Planting	X							
Section 331000	Water Distribution Piping	X							
Section 333000	Sanitary Sewer Systems	X							
Section 333100	Sewage Grinder Pump Station	X							
Section 334100	Storm Utility Drainage Piping	X							

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include, as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation, whether or not indicated as part of alternate.

B. Execute accepted alternates under the same conditions as other Work of the Contract.

C. Schedule: A Part 3 "Schedule of Alternates" Article is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Conference Room 903 - Electrical.

1. Base Bid: No work related to owner's card access equipment for Conference Room 903.
2. Alternate: Electrical infrastructure for owner's card access equipment for Conference Room 903 as indicated on Drawing 9-EP102 Enlarged Ninth Floor Power & Systems Plan – East.

END OF SECTION 012300

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Document 002600 "Procurement Substitution Procedures" for requirements for substitution requests prior to award of Contract.
2. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.2 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

1.3 ACTION SUBMITTALS

A. Substitution Requests: Submit documentation identifying product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.4 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.5 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.6 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Substitution request is fully documented and properly submitted.
c. Requested substitution will not adversely affect Contractor's construction schedule.
d. Requested substitution has received necessary approvals of authorities having jurisdiction.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution has been coordinated with other portions of the Work.
g. Requested substitution provides specified warranty.
h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience:

1. Architect will consider requests for substitution if received within 60 days after the Notice of Award. Requests received after that time may be considered or rejected at discretion of Architect.

a. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

1) Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
2) Requested substitution does not require extensive revisions to the Contract Documents.
3) Requested substitution is consistent with the Contract Documents and will produce indicated results.
4) Substitution request is fully documented and properly submitted.
5) Requested substitution will not adversely affect Contractor's construction schedule.

6) Requested substitution has received necessary approvals of authorities having jurisdiction.
7) Requested substitution is compatible with other portions of the Work.
8) Requested substitution has been coordinated with other portions of the Work.
9) Requested substitution provides specified warranty.
10) If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:

1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.
2. Section 013100 "Project Management and Coordination" for requirements for forms for contract modifications provided as part of web-based Project management software.

1.2 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on web-based Project management software.

1.3 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request or 10 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
c. Include costs of labor and supervision directly attributable to the change.
d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

e. Quotation Form: Use forms acceptable to Architect form provided as part of web-based Project management software.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Architect form provided as part of web-based Project management software.

1.4 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Owner will issue a Change Order for signatures of Owner and Contractor State University of New York Contract Change Order form.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements:

1. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.

1.2 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.3 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule. Cost-loaded Critical Path Method Schedule may serve to satisfy requirements for the schedule of values.

1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
2. Submit the schedule of values to Architect at earliest possible date, but no later than ten days before the date scheduled for submittal of initial Applications for Payment.
3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:

a. Project name and location.
b. Owner's name.
c. Owner's Project number.
d. Name of Architect.
e. Architect's Project number.
f. Contractor's name and address.

g. Date of submittal.

2. Arrange schedule of values consistent with format of AIA Document G703.
3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
4. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

   a. Differentiate between items stored on-site and items stored off-site.

5. Overhead Costs, Proportional Distribution: Include total cost and proportionate share of general overhead and profit for each line item.
6. Temporary Facilities: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
7. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
8. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.4 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments, as certified by Architect and paid for by Owner.

B. Payment Application Times: The date for each progress payment is indicated in the Owner/Contractor Agreement. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Application for Payment Forms: Use State University of New York Contractor's Application and Certification for Payment as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
4. Indicate separate amounts for work being carried out under Owner-requested

project acceleration.

E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:

    a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
    b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
    c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

F. Transmittal: Submit electronic signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of

schedule by each Contractor.
5. Products list (preliminary if not final).
6. Submittal schedule (preliminary if not final).
7. List of Contractor's staff assignments.
8. List of Contractor's principal consultants.
9. Copies of building permits.
10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
11. Initial progress report.
12. Report of preconstruction conference.

I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.

a. Complete administrative actions, submittals, and Work preceding this application, as described in Section 017700 "Closeout Procedures."

2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Certification of completion of final punch list items.
3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
4. Updated final statement, accounting for final changes to the Contract Sum.
5. AIA Document G706.
6. AIA Document G706A.
7. AIA Document G707.
8. Evidence that claims have been settled.
9. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
10. Final liquidated damages settlement statement.
11. Proof that taxes, fees, and similar obligations are paid.
12. Waivers and releases.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:

1. General coordination procedures.
2. Coordination drawings.
3. RFIs.
4. Digital project management procedures.
5. Web-based Project management software package.
6. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Requirements:

1. Section 011200 "Multiple Contract Summary" for a description of the division of work among separate contracts and responsibility for coordination activities not in this Section.
2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.
4. Section 019113 "General Commissioning Requirements" for coordinating the Work with Owner's Commissioning Authority.

1.2 DEFINITIONS

A. BIM: Building Information Modeling.

B. RFI: Request for Information. Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.3 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.

3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, in web-based Project software directory, and in prominent location in each built facility. Keep list current at all times.

1.4 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Coordination of Multiple Contracts: Each contractor shall cooperate with Project coordinator, who shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its own operations with operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and scheduled activities of other contractors and direction of Project coordinator to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.5 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:

   a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
   b. Coordinate the addition of trade-specific information to coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
   c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
   d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
   e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
   f. Indicate required installation sequences.
   g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms, showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Show the following:

    a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
    b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
    c. Fire-rated enclosures around ductwork.

7. Electrical Work: Show the following:

    a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
    b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
    c. Panel board, switchboard, switchgear, transformer, busway, generator, and motor-control center locations.
    d. Location of pull boxes and junction boxes, dimensioned from column center lines.

8. Fire-Protection System: Show the following:

    a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.

9. Review: Architect will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.
10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 013300 "Submittal Procedures."

C. Coordination Drawing Process: Prepare coordination drawings in the following manner:

1. Schedule submittal and review of Fire Sprinkler, Plumbing, HVAC, and Electrical Shop Drawings to make required changes prior to preparation of coordination drawings.
2. Commence routing of coordination drawing files with HVAC Installer, who will provide drawing plan files denoting approved ductwork. HVAC Installer will locate ductwork and piping on a single layer, using orange color. Forward drawings to Plumbing Installer.
3. Plumbing Installer will locate plumbing and equipment on a single layer, using blue color.
4. Fire Sprinkler Installer will locate piping and equipment, using red color. Fire Sprinkler Installer shall forward drawing files to Electrical Installer.
5. Electrical Installer will indicate service and feeder conduit runs and equipment in green color. Electrical Installer shall forward drawing files to Communications and Electronic Safety and Security Installer.
6. Communications and Electronic Safety and Security Installer will indicate cable trays and cabling runs and equipment in purple color. Communications and Electronic Safety and Security Installer shall forward completed drawing files to Contractor.
7. Contractor shall perform the final coordination review. As each coordination drawing is completed, Contractor will meet with Architect to review and resolve conflicts on the coordination drawings.

D. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:

1. File Preparation Format:

    a. Same digital data software program, version, and operating system as original Drawings.
    b. DWG, Version AutoCAD2023, operating in Microsoft Windows operating system.

2. File Submittal Format: Submit or post coordination drawing files using format same as file preparation format PDF format.
3. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.

    a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
    b. Digital Data Software Program: Drawings are available in AutoCAD 2023.
    c. Contractor shall execute a data licensing agreement in the form of AIA Document C106.

1.6 REQUEST FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Owner name.
3. Owner's Project number.
4. Name of Architect.
5. Architect's Project number.
6. Date.
7. Name of Contractor.
8. RFI number, numbered sequentially.
9. RFI subject.
10. Specification Section number and title and related paragraphs, as appropriate.
11. Drawing number and detail references, as appropriate.
12. Field dimensions and conditions, as appropriate.
13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
14. Contractor's signature.
15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: Form bound in Project Manual.

1. Attachments shall be electronic files in PDF format.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow ten days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for approval of Contractor's means and methods.
    d. Requests for coordination information already indicated in the Contract

Documents.

e. Requests for adjustments in the Contract Time or the Contract Sum.
f. Requests for interpretation of Architect's actions on submittals.
g. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 5 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Use software log that is part of web-based Project management software.

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number, including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within three days if Contractor disagrees with response.

1.7 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Use of Architect's Digital Data Files: Digital data files of Architect's CAD drawings will be provided by Architect for Contractor's use during construction.

1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project Record Drawings.
2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
3. Digital Drawing Software Program: Contract Drawings are available in AutoCAD 2023.
4. Contractor shall execute a data licensing agreement in the form of AIA Document C106 Digital Data Licensing Agreement.

a. Subcontractors and other parties granted access by Contractor to

Architect's digital data files shall execute a data licensing agreement in the form of AIA Document C106.

5. The following digital data files will be furnished for each appropriate discipline:

   a. Floor plans.
   b. Reflected ceiling plans.

B. Web-Based Project Management Software Package: Use Architect's web-based Project management software package for purposes of hosting and managing Project communication and documentation until Final Completion.

1. Web-based Project management software includes, at a minimum, the following features:

   a. Compilation of Project data, including Contractor, subcontractors, Architect, Architect's consultants, Owner, and other entities involved in Project. Include names of individuals and contact information.
   b. Access control for each entity for each workflow process, to determine entity's digital rights to create, modify, view, and print documents.
   c. Document workflow planning, allowing customization of workflow between project entities.
   d. Creation, logging, tracking, and notification for Project communications required in other Specification Sections, including, but not limited to, RFIs, submittals, Minor Changes in the Work, Construction Change Directives, and Change Orders.
   e. Track status of each Project communication in real time, and log time and date when responses are provided.
   f. Procedures for handling PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
   g. Processing and tracking of payment applications.
   h. Processing and tracking of contract modifications.
   i. Creating and distributing meeting minutes.
   j. Document management for Drawings, Specifications, and coordination drawings, including revision control.
   k. Management of construction progress photographs.

C. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:

1. Assemble complete submittal package into a single indexed file, incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.8 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times a minimum of seven days prior to meeting.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within seven days of the meeting.

B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

a. Responsibilities and personnel assignments.
b. Tentative construction schedule.
c. Phasing.
d. Critical work sequencing and long lead items.
e. Designation of key personnel and their duties.
f. Lines of communications.
g. Use of web-based Project software.
h. Procedures for processing field decisions and Change Orders.
i. Procedures for RFIs.
j. Procedures for testing and inspecting.
k. Procedures for processing Applications for Payment.
l. Distribution of the Contract Documents.
m. Submittal procedures.
n. Sustainable design requirements.
o. Preparation of Record Documents.
p. Use of the premises and existing building.
q. Work restrictions.
r. Working hours.
s. Owner's occupancy requirements.
t. Responsibility for temporary facilities and controls.
u. Procedures for moisture and mold control.
v. Procedures for disruptions and shutdowns.

w. Construction waste management and recycling.
x. Parking availability.
y. Office, work, and storage areas.
z. Equipment deliveries and priorities.
aa. First aid.
bb. Security.
cc. Progress cleaning.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other Sections and when required for coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

a. Contract Documents.
b. Options.
c. Related RFIs.
d. Related Change Orders.
e. Purchases.
f. Deliveries.
g. Submittals.
h. Review of mockups.
i. Possible conflicts.
j. Compatibility requirements.
k. Time schedules.
l. Weather limitations.
m. Manufacturer's written instructions.
n. Warranty requirements.
o. Compatibility of materials.
p. Acceptability of substrates.
q. Temporary facilities and controls.
r. Space and access limitations.
s. Regulations of authorities having jurisdiction.
t. Testing and inspecting requirements.
u. Installation procedures.
v. Coordination with other work.
w. Required performance results.
x. Protection of adjacent work.
y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.

4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.

1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

    a. Preparation of Record Documents.
    b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
    c. Procedures for completing and archiving web-based Project software site data files.
    d. Submittal of written warranties.
    e. Requirements for completing sustainable design documentation.
    f. Requirements for preparing operations and maintenance data.
    g. Requirements for delivery of material samples, attic stock, and spare parts.
    h. Requirements for demonstration and training.
    i. Preparation of Contractor's punch list.
    j. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
    k. Submittal procedures.
    l. Coordination of separate contracts.
    m. Owner's partial occupancy requirements.
    n. Installation of Owner's furniture, fixtures, and equipment.
    o. Responsibility for removing temporary facilities and controls.

4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

E. Progress Meetings: Conduct progress meetings at biweekly intervals.

1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Review and correct or approve minutes of previous progress meeting.

Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next period.

b. Review present and future needs of each entity present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Status of submittals.
4) Deliveries.
5) Off-site fabrication.
6) Access.
7) Site use.
8) Temporary facilities and controls.
9) Progress cleaning.
10) Quality and work standards.
11) Status of correction of deficient items.
12) Field observations.
13) Status of RFIs.
14) Status of Proposal Requests.
15) Pending changes.
16) Status of Change Orders.
17) Pending claims and disputes.
18) Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

F. Coordination Meetings: Conduct Project coordination meetings at weekly intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities

shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
    b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
    c. Review present and future needs of each contractor present, including the following:

        1) Interface requirements.
        2) Sequence of operations.
        3) Status of submittals.
        4) Deliveries.
        5) Off-site fabrication.
        6) Access.
        7) Site use.
        8) Temporary facilities and controls.
        9) Work hours.
        10) Hazards and risks.
        11) Progress cleaning.
        12) Quality and work standards.
        13) Status of RFIs.
        14) Proposal Requests.
        15) Change Orders.
        16) Pending changes.

3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Startup construction schedule.
2. Contractor's Construction Schedule.
3. Construction schedule updating reports.
4. Daily construction reports.
5. Material location reports.
6. Site condition reports.
7. Unusual event reports.

B. Related Requirements:

1. Section 011200 "Multiple Contract Summary" for preparing a combined Contractor's Construction Schedule.
2. Section 012900 "Payment Procedures" for schedule of values and requirements for use of cost-loaded schedule for Applications for Payment.
3. Section 014000 "Quality Requirements" for schedule of tests and inspections.

1.2 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.

C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine the critical path of Project and when activities can be performed.

D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Event: The starting or ending point of an activity.

F. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

G. Resource Loading: The allocation of labor and equipment necessary for completing an activity as scheduled.

1.3 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file.
2. PDF file.

B. Startup construction schedule.

1. Submittal of cost-loaded startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.

C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports to contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
3. Total Float Report: List of activities sorted in ascending order of total float.
4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.

F. Construction Schedule Updating Reports: Submit with Applications for Payment.

G. Daily Construction Reports: Submit at weekly intervals.

H. Material Location Reports: Submit at monthly intervals.

I. Site Condition Reports: Submit at time of discovery of differing conditions.

J. Unusual Event Reports: Submit at time of unusual event.

1.4 QUALITY ASSURANCE

A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule, including, but not limited to, the following:

1. Review software limitations and content and format for reports.
2. Verify availability of qualified personnel needed to develop and update schedule.
3. Discuss constraints, including phasing work stages area separations interim milestones and partial Owner occupancy.
4. Review delivery dates for Owner-furnished products.
5. Review schedule for work of Owner's separate contracts.
6. Review submittal requirements and procedures.
7. Review time required for review of submittals and resubmittals.
8. Review requirements for tests and inspections by independent testing and inspecting agencies.
9. Review time required for Project closeout and Owner startup procedures, including commissioning activities.
10. Review and finalize list of construction activities to be included in schedule.
11. Review procedures for updating schedule.

1.5 COORDINATION

A. Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

1.6 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Computer Scheduling Software: Prepare schedules using current version of a program that is capable of managing construction schedules.

1. Use Microsoft Project for current Windows operating system.

B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.

1. Contract completion date to not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
2. Temporary Facilities: Indicate start and completion dates for the following as applicable:

    a. Securing of approvals and permits required for performance of the Work.
    b. Temporary facilities.
    c. Construction of mock-ups, prototypes and samples.
    d. Owner interfaces and furnishing of items.
    e. Interfaces with Separate Contracts.
    f. Regulatory agency approvals.
    g. Punch list.

3. Procurement Activities: Include procurement process activities for the following long lead-time items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
4. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
5. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
6. Commissioning Time: Include no fewer than 15 days for commissioning.
7. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
8. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and Final Completion.

D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Work under More Than One Contract: Include a separate activity for each contract.
2. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
3. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.

4. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
5. Work Restrictions: Show the effect of the following items on the schedule:

    a. Coordination with existing construction.
    b. Limitations of continued occupancies.
    c. Uninterruptible services.
    d. Partial occupancy before Substantial Completion.
    e. Use-of-premises restrictions.
    f. Provisions for future construction.
    g. Seasonal variations.
    h. Environmental control.

6. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

    a. Subcontract awards.
    b. Submittals.
    c. Purchases.
    d. Mockups.
    e. Fabrication.
    f. Sample testing.
    g. Deliveries.
    h. Installation.
    i. Tests and inspections.
    j. Adjusting.
    k. Curing.
    l. Startup and placement into final use and operation.
    m. Commissioning.

7. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:

    a. Structural completion.
    b. Temporary enclosure and space conditioning.
    c. Permanent space enclosure.
    d. Completion of mechanical installation.
    e. Completion of electrical installation.
    f. Substantial Completion.

E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion, and the following interim milestones:

1. Temporary enclosure and space conditioning.

F. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.

1. See Section 012900 "Payment Procedures" for cost reporting and payment procedures.

G. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and the Contract Time.

H. Contractor's Construction Schedule Updating: At bi-weekly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Final Completion percentage for each activity.

I. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

J. Distribution: Distribute copies of approved schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.7 STARTUP CONSTRUCTION SCHEDULE

A. Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within seven days of date established for the Notice of Award.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 120 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

1.8 GANTT-CHART SCHEDULE REQUIREMENTS

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for the Notice of Award.

1. Base schedule on the startup construction schedule and additional information received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

1.9 CPM SCHEDULE REQUIREMENTS

A. Prepare network diagrams using AON (activity-on-node) format.

B. Startup Network Diagram: Submit diagram within 14 days of date established for the Notice of Award. Outline significant construction activities for the first 120 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

C. CPM Schedule: Prepare Contractor's Construction Schedule using a cost- and resource-loaded, time-scaled CPM network analysis diagram for the Work.

1. Develop network diagram in sufficient time to submit CPM schedule, so it can be accepted for use no later than 60 days after date established for the Notice of Award.

a. Failure to include any work item required for performance of this Contract must not excuse Contractor from completing all work within applicable completion dates.

2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.

4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule to coordinate with the Contract Time.

D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:

    a. Preparation and processing of submittals.
    b. Mobilization and demobilization.
    c. Purchase of materials.
    d. Delivery.
    e. Fabrication.
    f. Utility interruptions.
    g. Installation.
    h. Work by Owner that may affect or be affected by Contractor's activities.
    i. Testing and inspection.
    j. Commissioning.
    k. Punch list and Final Completion.
    l. Activities occurring following Final Completion.

2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates to be consistent with Contract milestone dates.
3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.

    a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.

5. Cost- and Resource-Loading of CPM Schedule: Assign cost to construction activities on the CPM schedule. Do not assign costs to submittal activities. Obtain Architect's approval prior to assigning costs to fabrication and delivery activities. Assign costs under main subcontracts for testing and commissioning activities, operation and maintenance manuals, punch list activities, Project record documents, and demonstration and training (if applicable), in the amount of 5 percent of the Contract Sum.

    a. Each activity cost to reflect an appropriate value subject to approval by Architect.
    b. Total cost assigned to activities to equal the total Contract Sum.

E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall Project schedule.

F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:

1. Contractor or subcontractor and the Work or activity.
2. Description of activity.
3. Main events of activity.
4. Immediate preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.
9. Average size of workforce.
10. Dollar value of activity (coordinated with the schedule of values).

G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

H. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.

1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.

    a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
    b. Submit value summary printouts one week before each regularly scheduled progress meeting.

1.10 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Testing and inspection.
8. Accidents.
9. Meetings and significant decisions.
10. Unusual events.
11. Stoppages, delays, shortages, and losses.
12. Meter readings and similar recordings.
13. Emergency procedures.
14. Orders and requests of authorities having jurisdiction.
15. Change Orders received and implemented.
16. Construction Change Directives received and implemented.
17. Services connected and disconnected.
18. Equipment or system tests and startups.
19. Partial completions and occupancies.
20. Substantial Completions authorized.

B. Material Location Reports: At weekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List to be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:

1. Material stored prior to previous report and remaining in storage.
2. Material stored prior to previous report and since removed from storage and installed.
3. Material stored following previous report and remaining in storage.

C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

D. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

1. Submit unusual event reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)

END OF SECTION 013200

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Concealed Work photographs.
3. Periodic construction photographs.
4. Preconstruction video recordings.

B. Related Requirements:

1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.
2. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.
3. Section 024119 "Selective Demolition" for photographic documentation before selective demolition operations commence.

1.2 INFORMATIONAL SUBMITTALS

A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph and video recording. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.

B. Digital Photographs: Submit image files within seven days of taking photographs.

1. Submit photos on CD-ROM or thumb-drive. Include copy of key plan indicating each photograph's location and direction.
2. Identification: Provide the following information with each image description in file metadata tag:

a. Name of Project.
b. Name and contact information for photographer.
c. Name of Architect.
d. Name of Contractor.
e. Date photograph was taken.
f. Description of location, vantage point, and direction.
g. Unique sequential identifier keyed to accompanying key plan.

C. Video Recordings: Submit video recordings within seven days of recording.

1. Submit video recordings on CD-ROM or thumb drive. Include copy of key plan indicating each video's location and direction.

2. Identification: With each submittal, provide the following information in file metadata tag:

    a. Name of Project.
    b. Name and contact information for photographer.
    c. Name of Architect.
    d. Name of Contractor.
    e. Date video recording was recorded.
    f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

1.3 FORMATS AND MEDIA

A. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

B. File Names: Name media files with date and sequential numbering suffix.

1.4 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs with maximum depth of field and in focus.

1. Maintain key plan with each set of construction photographs that identifies each photographic location.

B. Preconstruction Photographs: Before commencement of the Work, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.

1. Flag construction limits before taking construction photographs.
2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.
3. Take 20 photographs of existing buildings either on or adjoining property, to accurately record physical conditions at start of construction.
4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

C. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:

1. Piping.
2. Electrical conduit.
3. Waterproofing and weather-resistant barriers.

D. Periodic Construction Photographs: Take 20 photographs weekly. Select vantage points to show status of construction and progress since last photographs were taken.

1.5 CONSTRUCTION VIDEO RECORDINGS

A. Preconstruction Video Recording: Before starting demolition construction, record video recording of Project site and surrounding properties from different vantage points .

1. Flag construction limits before recording construction video recordings.
2. Show existing conditions adjacent to Project site before starting the Work.
3. Show existing buildings either on or adjoining Project site to accurately record physical conditions at the start of demolition construction.
4. Show protection efforts by Contractor.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)

END OF SECTION 013233

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Section 013100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
3. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
4. Section 014000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
5. Section 017700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
6. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
7. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.3 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.

    a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.

4. Format: Arrange the following information in a tabular format:

    a. Scheduled date for first submittal.
    b. Specification Section number and title.
    c. Submittal Category: Action; informational.
    d. Name of subcontractor.
    e. Description of the Work covered.
    f. Scheduled date for Architect's final release or approval.
    g. Scheduled dates for purchasing.
    h. Scheduled date of fabrication.
    i. Scheduled dates for installation.
    j. Activity or event number.

1.4 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Architect.
4. Name of Contractor.
5. Name of firm or entity that prepared submittal.
6. Names of subcontractor, manufacturer, and supplier.
7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
8. Category and type of submittal.
9. Submittal purpose and description.
10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
11. Drawing number and detail references, as appropriate.
12. Indication of full or partial submittal.
13. Location(s) where product is to be installed, as appropriate.
14. Other necessary identification.
15. Remarks.
16. Signature of transmitter.

B. Options: Identify options requiring selection by Architect.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

E. Submittals Utilizing Web-Based Project Software: Prepare submittals as PDF files or other format indicated by Project management software.

1.5 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project management software website. Enter required data in web-based software site to fully identify submittal.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.

    a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 14 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 14 days for review of each resubmittal.

4. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.

D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block, and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.6 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

a. Manufacturer's catalog cuts.
b. Manufacturer's product specifications.
c. Standard color charts.
d. Statement of compliance with specified referenced standards.
e. Testing by recognized testing agency.
f. Application of testing agency labels and seals.
g. Notation of coordination requirements.
h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

a. Wiring diagrams that show factory-installed wiring.
b. Printed performance curves.
c. Operational range diagrams.
d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data unless submittal based on Architect's digital data drawing files is otherwise permitted.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

   a. Identification of products.
   b. Schedules.
   c. Compliance with specified standards.
   d. Notation of coordination requirements.
   e. Notation of dimensions established by field measurement.
   f. Relationship and attachment to adjoining construction clearly indicated.
   g. Seal and signature of professional engineer if specified.

2. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.

C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:

   a. Project name and submittal number.
   b. Generic description of Sample.
   c. Product name and name of manufacturer.
   d. Sample source.
   e. Number and title of applicable Specification Section.
   f. Specification paragraph number and generic name of each item.

3. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

   a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
   b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units, showing the full range of colors, textures, and patterns available.

    a. Number of Samples: Submit two full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

    a. Number of Samples: Submit two sets of Samples. Architect will retain one Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record Sample.

        1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
        2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:

1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
2. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:

1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for substrate preparation and primers required.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

    a. Name of evaluation organization.
    b. Date of evaluation.

c. Time period when report is in effect.
d. Product and manufacturers' names.
e. Description of product.
f. Test procedures and results.
g. Limitations of use.

1.7 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 insufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file and paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.8 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Contractor's Approval: Indicate Contractor's approval for each submittal with indication in web-based Project management software. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.9 ARCHITECT'S REVIEW

A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return.

1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action.

2. Submittals by Web-Based Project Management Software: Architect will indicate, on Project management software website, the appropriate action.

B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Architect will return without review submittals received from sources other than Contractor.

F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)

END OF SECTION 013300

SUBMITTAL COVER SHEET

PROJECT: SUNY 2025-088 Renovate Labs Furnas 913, 914 Disciplinary Excellence
ARCHITECT: Kideney Architects, P.C.
KA Project No. 2023035.03

Contractor:_____

Spec Section #_____ Spec Section Title_____

Spec Section Paragraph:_____ Ref/Dwg#_____

Submittal Item Description_____

(include only one submittal item per cover sheet, each copy must have a copy of the cover sheet attached)

Submittal Item Supplier_____

Submittal Item Manufacturer_____

Submittal Item Status (check one) ☐ Original -or- ☐ Resubmittal

Submittal Item Type (check one)

☐ Shop Drawing ☐ Schedule ☐ Sample ☐ Warranty

☐ Product Data ☐ Test Report ☐ Color Sample ☐ _____

(Other)

List remarks &/or deviations from specifications _____

_____

I have reviewed this submittal item and verify that it does meet the specifications except as noted above.

_____ _____

(Contractor's signature) (Date)

For Architect / Engineer Use only	
Received from Contractor Date:_____	Returned to Contractor Date:_____
Remarks	Architect / Engineer Action Stamp

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Requirements:

1.2 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).

D. Mockups: Physical assemblies of portions of the Work constructed to establish the standard by which the Work will be judged. Mockups are not Samples.

1. Mockups are used for one or more of the following:

a. Verify selections made under Sample submittals.

b. Demonstrate aesthetic effects.
c. Demonstrate the qualities of products and workmanship.
d. Demonstrate successful installation of interfaces between components and systems.
e. Perform preconstruction testing to determine system performance.

2. Product Mockups: Mockups that may include multiple products, materials, or systems specified in a single Section.
3. In-Place Mockups: Mockups constructed on-site in their actual final location as part of permanent construction.

E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) in accordance with 29 CFR 1910.7, by a testing agency accredited in accordance with NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

G. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" has the same meaning as the term "testing agency."

I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

1.3 DELEGATED DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.4 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified is the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 ACTION SUBMITTALS

A. Mockup Shop Drawings:

1. Include plans, sections, elevations, and details, indicating materials and size of mockup construction.
2. Indicate manufacturer and model number of individual components.
3. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Contractor's quality-control personnel.

B. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:

1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.

C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

E. Reports: Prepare and submit certified written reports and documents as specified.

F. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.7 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

1. Project quality-control manager may also serve as Project superintendent.

B. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

C. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:

1. Contractor-performed tests and inspections, including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
3. Owner-performed tests and inspections indicated in the Contract Documents.

D. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring the Work into compliance with standards of workmanship established by Contract requirements and approved mockups.

E. Monitoring and Documentation: Maintain testing and inspection reports, including log of approved and rejected results. Include Work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming Work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.8 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample-taking and testing and inspection.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement of whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.

3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement of whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

1.9 QUALITY ASSURANCE

A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities be performed by entities who are recognized experts in those operations. Specialists will satisfy qualification requirements indicated and engage in the activities indicated.

1. Requirements of authorities having jurisdiction supersede requirements for specialists.

G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor's Responsibilities:

   a. Provide test specimens representative of proposed products and construction.
   b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
   c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
   d. Build site-assembled test assemblies and mockups, using installers who will perform same tasks for Project.
   e. When testing is complete, remove test specimens and test assemblies, and mockups; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from the Contract Documents.

K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups of size indicated.
2. Build mockups in location indicated or, if not indicated, as directed by Architect.
3. Notify Architectseven days in advance of dates and times when mockups will be constructed.
4. Employ supervisory personnel who will oversee mockup construction. Employ workers who will be employed to perform same tasks during the construction at Project.
5. Demonstrate the proposed range of aesthetic effects and workmanship.
6. Obtain Architect's approval of mockups before starting corresponding Work, fabrication, or construction.

   a. Allow seven days for initial review and each re-review of each mockup.

7. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.

8. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
9. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
10. Demolish and remove mockups when directed unless otherwise indicated.

1.10 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
4. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Architect, Commissioning Authority , Construction Manager, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from requirements.

4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's and authorities' having jurisdiction reference during normal working hours.

1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

PART 1 - GENERAL

1.1 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect. Other terms, including "requested," "authorized," "selected," "required," and "permitted," have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms, including "shown," "noted," "scheduled," and "specified," have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.2 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

1. For standards referenced by applicable building codes, comply with dates of standards as listed in building codes.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.3 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.

1. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
2. ICC - International Code Council; www.iccsafe.org.
3. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.

1. DOE - U.S. Department of Energy; www.energy.gov.
2. EPA - United States Environmental Protection Agency; www.epa.gov.
3. OSHA - Occupational Safety & Health Administration; www.osha.gov.
4. USDA - U.S. Department of Agriculture; Rural Utilities Service; www.usda.gov.
5. USPS - United States Postal Service; www.usps.com.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.
2. Section 011200 "Multiple Contract Summary" for responsibilities for temporary facilities and controls for projects utilizing multiple contracts.

1.2 USE CHARGES

A. Sewer Service: Owner will pay sewer-service use charges for sewer usage by all entities for construction operations.

B. Water Service: Owner will pay water-service use charges for water used by all entities for construction operations.

C. Electric Power Service: Owner will pay electric-power-service use charges for electricity used by all entities for construction operations.

D. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

E. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

F. Sewer, Water, and Electric Power Service: Use charges are specified in Section 011200 "Multiple Contract Summary."

1.3 INFORMATIONAL SUBMITTALS

A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.

B. Implementation and Termination Schedule: Within 15 days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.

C. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.

D. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

E. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold. Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.

1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and requirements for replacing water-damaged Work.
2. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
3. Indicate methods to be used to avoid trapping water in finished work.

F. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Include the following:

1. Locations of dust-control partitions at each phase of work.
2. HVAC system isolation schematic drawing.
3. Location of proposed air-filtration system discharge.
4. Waste-handling procedures.
5. Other dust-control measures.

G. Noise and Vibration Control Plan: Identify construction activities that may impact the occupancy and use of existing spaces within the building or adjacent existing buildings, whether occupied by others, or occupied by Owner. Include the following:

1. Methods used to meet the goals and requirements of Owner.
2. Concrete cutting method(s) to be used.
3. Location of construction devices on the site.
4. Show compliance with the use and maintenance of quieted construction devices for the duration of the Project.
5. Indicate activities that may disturb building occupants and that are planned to be performed during non-standard working hours as coordinated with Owner.

1.4 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

C. Accessible Temporary Egress: Comply with applicable provisions in the DOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.

1.5 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch- thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top rails.

B. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch- thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide galvanized-steel bases for supporting posts.

C. Fencing Windscreen Privacy Screen: Polyester fabric scrim with grommets for attachment to chain-link fence, sized to height of fence, in color selected by Architect from manufacturer's standard colors.

D. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less in accordance with ASTM E84 and passing NFPA 701 Test Method 2.

E. Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats, minimum 36 by 60 inches.

F. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

A. EQUIPMENT

B. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

C. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating, Cooling, and Dehumidifying Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.

D. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

3.2 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

C. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

1. Prior to commencing work, isolate the HVAC system in area where work is to be performed in accordance with coordination drawings.

    a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
    b. Maintain negative air pressure within work area, using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.

2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

3.3 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

1. Connect temporary sewers to private system indicated as directed by authorities having jurisdiction.

C. Water Service:

1. Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, safety shower and eyewash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

1. Use of Permanent Toilets: Use of Owner's existing or new toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

E. Temporary Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

1. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.

F. Electric Power Service:

1. Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

G. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

H. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install WiFi cell phone access equipment land-based telephone line(s) for each field office.

1. Provide additional telephone lines for the following:
2. At each telephone, post a list of important telephone numbers.

a. Police and fire departments.
b. Ambulance service.
c. Contractor's home office.
d. Contractor's emergency after-hours telephone number.
e. Architect's office.
f. Engineers' offices.
g. Owner's office.
h. Principal subcontractors' field and home offices.

I. Electronic Communication Service: Provide secure WiFi wireless connection to internet with provisions for access by Architect and Owner.

J. Project Computer: Provide a desktop computer in the primary field office adequate for use by Architect and Owner to access Project electronic documents and maintain electronic communications. Equip computer with not less than the following:

1. Processor: Intel Core i5 or i7.
2. Memory: 16 gigabyte.
3. Disk Storage: 1 -terabyte hard-disk drive and combination DVD-RW/CD-RW drive.
4. Display: 24-inch LCD monitor with 256-Mb dedicated video RAM.
5. Full-size keyboard and mouse.
6. Network Connectivity: 10/100BaseT Ethernet.
7. Operating System: Microsoft Windows 10 Professional.
8. Productivity Software:

a. Microsoft Office Professional, 2013 or higher, including Word, Excel, and Outlook.
b. Adobe Reader DC.

c. WinZip 10.0 or higher.

9. Printer: "All-in-one" unit equipped with printer server, combining color printing, photocopying, scanning, and faxing, or separate units for each of these three functions.
10. Internet Service: Broadband modem, router, and ISP, equipped with hardware firewall, providing minimum 10.0 -Mbps upload and 15 -Mbps download speeds at each computer.
11. Internet Security: Integrated software, providing software firewall, virus, spyware, phishing, and spam protection in a combined application.
12. Backup: External hard drive, minimum 2 terabytes, with automated backup software providing daily backups.

3.4 SUPPORT FACILITIES INSTALLATION

A. Comply with the following:

1. Provide construction for temporary field offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible in accordance with ASTM E136. Comply with NFPA 241.
2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas as indicated within construction limits indicated on Drawings.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

C. Temporary Use of Planned Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.

1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
2. Prepare subgrade and install subbase and base for temporary roads and paved areas in accordance with Section 312000 "Earth Moving."
3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.

D. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain, including curbs, pavement, and utilities.

2. Maintain access for fire-fighting equipment and access to fire hydrants.

E. Parking: Use designated areas of Owner's existing parking areas for construction personnel.

F. Storage and Staging: Use designated areas of Project site for storage and staging needs.

G. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

H. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

a. Provide temporary, directional signs for construction personnel and visitors.

3. Maintain and touch up signs, so they are legible at all times.

I. Waste Disposal Facilities:

1. Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."

J. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

K. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.

1. Do not load elevators beyond their rated weight capacity.
2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work, so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.

L. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.

1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas, so no evidence remains of correction work.

M. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Section 011000 "Summary."

C. Tree and Plant Protection:

1. Comply with requirements specified in Section 015639 "Temporary Tree and Plant Protection."
2. Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

D. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals, so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.

E. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.

2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.

F. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

G. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

H. Temporary Egress: Provide temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction. Provide signage directing occupants to temporary egress.

I. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

J. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by tenants from fumes and noise.

1. Construct dustproof partitions with gypsum wallboard, with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
3. Insulate partitions to control noise transmission to occupied areas.
4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
5. Protect air-handling equipment.
6. Provide walk-off mats at each entrance through temporary partition.

K. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.

1. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other Sections.
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition in accordance with requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign, stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.6 MOISTURE AND MOLD CONTROL

A. Moisture and Mold Protection: Protect stored materials and installed Work in accordance with Moisture and Mold Protection Plan.

B. Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

1. Protect porous materials from water damage.
2. Protect stored and installed material from flowing or standing water.
3. Keep porous and organic materials from coming into prolonged contact with concrete.
4. Remove standing water from decks.
5. Keep deck openings covered or dammed.

C. Partially Enclosed Construction Period: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:

1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
2. Keep interior spaces reasonably clean and protected from water damage.
3. Periodically collect and remove waste containing cellulose or other organic matter.
4. Discard or replace water-damaged material.
5. Do not install material that is wet.
6. Discard and replace stored or installed material that begins to grow mold.
7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.

D. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:

1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
2. Use temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

    a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective and require replacing.

b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
c. Remove and replace materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.7 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

PART 1 - GENERAL

1.1 SUMMARY

A. The Work of This Section Includes: Administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Section 011000 "Summary" for Contractor requirements related to Owner-furnished products.
2. Section 012500 "Substitution Procedures" for requests for substitutions.
3. Section 014200 "References" for applicable industry standards for products specified.
4. Section 017700 "Closeout Procedures" for submitting warranties.

1.2 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products unless otherwise indicated.
3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of the basis-of-design product establish salient characteristics of products.

1. Evaluating Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special

features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification. Manufacturer's published attributes and characteristics of basis-of-design product also establish salient characteristics of products for purposes of evaluating comparable products.

C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.

D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:

1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
2. Data indicating compliance with the requirements specified in "Comparable Products" Article.

E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures."

F. Substitution: Refer to Section 012500 "Substitution Procedures" for definition and limitations on substitutions.

1.3 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Resolution of Compatibility Disputes between Multiple Contractors:

a. Contractors are responsible for providing products and construction methods compatible with products and construction methods of other contractors.
b. If a dispute arises between the multiple contractors over concurrently selectable but incompatible products, Architect will determine which products will be used.

B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is inconspicuous.
2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:

    a. Name of product and manufacturer.
    b. Model and serial number.
    c. Capacity.
    d. Speed.
    e. Ratings.

3. See individual identification Sections in Divisions 21, 22, 23, and 26 for additional equipment identification requirements.

1.4 COORDINATION

A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.

C. Storage:

1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
2. Store products to allow for inspection and measurement of quantity or counting of units.
3. Store materials in a manner that will not endanger Project structure.

4. Store products that are subject to damage by the elements under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection from wind.
5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.

1.6 PRODUCT WARRANTIES

A. Warranties specified in other Sections are to be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of Owner or endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of Owner or endorsed by manufacturer to Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.

3. Where products are accompanied by the term "as selected," Architect will make selection.
4. Descriptive, performance, and reference standard requirements in Specifications establish salient characteristics of products.

B. Product Selection Procedures:

1. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed or an unnamed product that complies with requirements.

    a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
    b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.

2. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed or a product by an unnamed manufacturer that complies with requirements.

    a. Non-limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following."
    b. Provision of products of an unnamed manufacturer is not considered a substitution, if the product complies with requirements.

3. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

    a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.

C. Visual Matching Specification: Where Specifications require the phrase "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:

1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

B. Architect's Action on Comparable Products Submittal: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for a comparable product. Architect will notify Contractor of approval or rejection of proposed comparable product within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

1. Architect's Approval of Submittal: Marked with approval notation from Architect's action stamp Indication of approval in web-based Project management software. See Section 013300 "Submittal Procedures."
2. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

C. Submittal Requirements, Two-Step Process: Approval by Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:

1. Construction layout.
2. Field engineering.
3. Installation.
4. Cutting and patching.
5. Coordination of Owner's portion of the Work.
6. Progress cleaning.
7. Starting and adjusting.
8. Protection of installed construction.
9. Correction of the Work.

B. Related Requirements:

1. Section 011000 "Summary" for coordination of Owner-furnished products, and limits on use of Project site.
2. Section 013300 "Submittal Procedures" for submitting surveys.
3. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.
4. Section 024119 "Selective Demolition" for demolition and removal of selected portions of the building.
5. Section 078413 "Penetration Firestopping" for patching penetrations in fire-rated construction.

1.2 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.3 PREINSTALLATION MEETINGS

A. Cutting and Patching Conference: Conduct conference at Project site.

1. Prior to commencing work requiring cutting and patching, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting and patching work. Inform Architect of scheduled meeting. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:

    a. Contractor's superintendent.
    b. Trade supervisor responsible for cutting operations.
    c. Trade supervisor(s) responsible for patching of each type of substrate.
    d. Mechanical, electrical, and utilities subcontractors' supervisors, to the extent each trade is affected by cutting and patching operations.

2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For professional engineer.

B. Certificates: Submit certificate signed by professional engineer, certifying that location and elevation of improvements comply with requirements.

C. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:

1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
3. Products: List products to be used for patching and firms or entities that will perform patching work.
4. Dates: Indicate when cutting and patching will be performed.
5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.

    a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

D. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.5 CLOSEOUT SUBMITTALS

A. Final Property Survey: Submit 10 copies showing the Work performed and record survey data.

1.6 QUALITY ASSURANCE

A. Professional Engineer Qualifications: Refer to Section 014000 "Quality Requirements."

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:

a. Primary operational systems and equipment.
b. Fire separation assemblies.
c. Air or smoke barriers.
d. Fire-suppression systems.
e. Plumbing piping systems.
f. Mechanical systems piping and ducts.
g. Control systems.
h. Communication systems.
i. Fire-detection and -alarm systems.
j. Conveying systems.
k. Electrical wiring systems.
l. Operating systems of special construction.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:

a. Water, moisture, or vapor barriers.
b. Membranes and flashings.
c. Exterior curtain-wall construction.
d. Sprayed fire-resistive material.
e. Equipment supports.
f. Piping, ductwork, vessels, and equipment.
g. Noise- and vibration-control elements and systems.

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.

C. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work, including Specification Section number and paragraph, and Drawing sheet number and detail, where applicable.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect in accordance with requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify Architect promptly.

B. Engage a professional engineer experienced in laying out the Work, using the following accepted surveying practices:

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish limits on use of Project site.

3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect or Construction Manager. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

C. Final Property Survey: Engage a professional engineer to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by professional engineer, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.

1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 INSTALLATION

A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb, and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces, unless otherwise indicated on Drawings.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.

F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.

G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.

3.6 CUTTING AND PATCHING

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of Work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements in Section 011000 "Summary."

F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3. Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

    a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 COORDINATION OF OWNER'S PORTION OF THE WORK

A. Site Access: Provide access to Project site for Owner's construction personnel.

1. Provide temporary facilities required for Owner-furnished, Contractor-installed and Owner-furnished, Owner-installed products.
2. Refer to Section 011000 "Summary" for other requirements for Owner-furnished, Contractor-installed and Owner-furnished, Owner-installed products.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.8 PROGRESS CLEANING

A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, in accordance with regulations.

    a. Use containers intended for holding waste materials of type to be stored.

4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces in accordance with written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls."

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.9 STARTING AND ADJUSTING

A. Coordinate startup and adjusting of equipment and operating components with requirements in Section 019113 "General Commissioning Requirements."

B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.10 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

C. Comply with manufacturer's written instructions for temperature and relative humidity.

3.11 CORRECTION OF THE WORK

A. Repair or remove and replace damaged, defective, or nonconforming Work. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.

C. Restore permanent facilities used during construction to their specified condition.

D. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

E. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

F. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017300

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final Completion procedures.
3. List of incomplete items.
4. Submittal of Project warranties.
5. Final cleaning.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and Final Completion.
2. Section 013233 "Photographic Documentation" for submitting Final Completion construction photographic documentation.
3. Section 017823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
4. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
5. Section 017900 "Demonstration and Training" for requirements to train Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

1.2 DEFINITIONS

A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest-control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number.

    a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Owner's signature for receipt of submittals.

5. Submit testing, adjusting, and balancing records.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 14 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.

4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
6. Advise Owner of changeover in utility services.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements.
10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 14 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:

1. Submit a final Application for Payment in accordance with Section 012900 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list will state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 14 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as

incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor, listed by room or space number.
2. Organize items applying to each space by major element, including categories for ceilings, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

    a. Project name.
    b. Date.
    c. Name of Architect.
    d. Name of Contractor.
    e. Page number.

4. Submit list of incomplete items in the following format:

    a. MS Excel Electronic File: Architect will return annotated file.
    b. PDF Electronic File: Architect will return annotated file.
    c. Web-Based Project Software Upload: Utilize software feature for creating and updating list of incomplete items (punch list).

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

1. Submit by uploading to web-based project software site.

E. Warranties in Paper Form:

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

F. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

    a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
    b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
    d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    e. Remove snow and ice to provide safe access to building.
    f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free

condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

g. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Clean flooring, removing debris, dirt, and staining; clean in accordance with manufacturer's instructions.
i. Vacuum and mop concrete.
j. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean in accordance with manufacturer's instructions if visible soil or stains remain.
k. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
l. Remove labels that are not permanent.
m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
p. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.

    1) Clean HVAC system in compliance with NADCA ACR. Provide written report on completion of cleaning.

q. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
r. Clean strainers.
s. Leave Project clean and ready for occupancy.

C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

D. Construction Waste Disposal: Comply with waste-disposal requirements in Section 015000 "Temporary Facilities and Controls."

3.2 CORRECTION OF THE WORK

A. Complete repair and restoration operations required by "Correction of the Work" Article in Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory manuals.
2. Emergency manuals.
3. Systems and equipment operation manuals.
4. Systems and equipment maintenance manuals.
5. Product maintenance manuals.

B. Related Requirements:

1. Section 011200 "Multiple Contract Summary" for coordinating operation and maintenance manuals covering the Work of multiple contracts.
2. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
3. Section 019113 "General Commissioning Requirements" for verification and compilation of data into operation and maintenance manuals.

1.2 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.3 CLOSEOUT SUBMITTALS

A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operation and maintenance manuals in the following format:

1. Submit on digital media acceptable to Architect by uploading to web-based project software site. Enable reviewer comments on draft submittals.

2. Submit three paper copies to owner. upon approval of digital copies .

C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.

1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.

E. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.4 FORMAT OF OPERATION AND MAINTENANCE MANUALS

A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.

1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.

b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

1.5 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual to contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name and contact information for Contractor.
6. Name and contact information for Construction Manager.
7. Name and contact information for Architect.
8. Name and contact information for Commissioning Authority.
9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
10. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation in accordance with ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.6 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY MANUAL

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals. List items and their location to facilitate ready access to desired information. Include the following:

1. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
2. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
3. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

1.7 EMERGENCY MANUALS

A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

B. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.
7. System, subsystem, or equipment failure.
8. Chemical release or spill.

D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

E. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

1.8 SYSTEMS AND EQUIPMENT OPERATION MANUALS

A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Performance and design criteria if Contractor has delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.

7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

C. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

D. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

1.9 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.

C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

    a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of maintenance manuals.

1.10 PRODUCT MAINTENANCE MANUALS

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

E. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.

5. Repair instructions.

F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)

END OF SECTION 017823

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Instruction in operation and maintenance of systems, subsystems, and equipment.
2. Demonstration and training video recordings.

1.2 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

B. Attendance Record: For each training module, submit list of participants and length of instruction time.

C. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.3 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit once copy within fourteen days of end of each training module.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.
b. Name of Architect.
c. Name of Contractor.
d. Date of video recording.

2. Transcript:

   a. Prepared and bound in format matching operation and maintenance manuals. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video recording. Include name of Project and date of video recording on each page.
   b. Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.

3. At completion of training, submit complete training manual(s) for Owner's use prepared in same paper and PDF file format required for operation and maintenance manuals specified in Section 017823 "Operation and Maintenance Data."

1.4 QUALITY ASSURANCE

A. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.5 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.6 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

   a. System, subsystem, and equipment descriptions.
   b. Performance and design criteria if Contractor is delegated design responsibility.
   c. Operating standards.
   d. Regulatory requirements.
   e. Equipment function.
   f. Operating characteristics.
   g. Limiting conditions.
   h. Performance curves.

2. Documentation: Review the following items in detail:

   a. Emergency manuals.
   b. Systems and equipment operation manuals.
   c. Systems and equipment maintenance manuals.
   d. Product maintenance manuals.
   e. Project Record Documents.
   f. Identification systems.
   g. Warranties and bonds.
   h. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

   a. Instructions on meaning of warnings, trouble indications, and error messages.
   b. Instructions on stopping.
   c. Shutdown instructions for each type of emergency.
   d. Operating instructions for conditions outside of normal operating limits.
   e. Sequences for electric or electronic systems.
   f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

   a. Startup procedures.
   b. Equipment or system break-in procedures.
   c. Routine and normal operating instructions.

d. Regulation and control procedures.
e. Control sequences.
f. Safety procedures.
g. Instructions on stopping.
h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:

a. Alignments.
b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

a. Diagnostic instructions.
b. Test and inspection procedures.

7. Maintenance: Include the following:

a. Inspection procedures.
b. Types of cleaning agents to be used and methods of cleaning.
c. List of cleaning agents and methods of cleaning detrimental to product.
d. Procedures for routine cleaning.
e. Procedures for preventive maintenance.
f. Procedures for routine maintenance.
g. Instruction on use of special tools.

8. Repairs: Include the following:

a. Diagnosis instructions.
b. Repair instructions.
c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
d. Instructions for identifying parts and components.
e. Review of spare parts needed for operation and maintenance.

1.7 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."

B. Set up instructional equipment at instruction location.

1.8 INSTRUCTION

A. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner, through Architect, with at least seven days' advance notice.

B. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

C. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.

D. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

1.9 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full HD mode with vibration reduction technology.

1. Submit video recordings .
2. File Hierarchy: Organize folder structure and file locations in accordance with Project Manual table of contents. Provide complete screen-based menu.
3. File Names: Utilize file names based on name of equipment generally described in video segment, as identified in Project specifications.
4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the equipment demonstration and training recording that describes the following for each Contractor involved on the Project, arranged in accordance with Project Manual table of contents:

a. Name of Contractor/Installer.
b. Business address.
c. Business phone number.
d. Point of contact.
e. Email address.

B. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.

1. Film training session(s) in segments not to exceed 15 minutes.

a. Produce segments to present a single significant piece of equipment per segment.

b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.

C. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.

1. Furnish additional portable lighting as required.

D. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)

END OF SECTION 017900

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General requirements for coordinating and scheduling commissioning activities.
2. Commissioning meetings.
3. Commissioning reports.
4. Use of commissioning process test equipment, instrumentation, and tools.
5. Construction checklists, including, but not limited to, installation checks, startup, performance tests, and performance test demonstration.
6. Commissioning tests and commissioning test demonstration.
7. Adjusting, verifying, and documenting identified systems and assemblies.
8. Commissioning related to Mechanical, Electrical and Building Envelope systems will be provided by Owners Representative (3rd party). The Contractor shall provide information to the Commissioning Authority (CxA) such as, but not limited to, equipment submittals, installation manuals, operation and maintenance manuals, training, and as-built record drawings. The Contractor shall attend all commissioning meetings during construction. The Contractor shall complete pre-functional checklists provided by the CxA. The Contractor shall perform functional tests and complete functional checklists, as witnessed by the CxA. Items involved in commissioning shall include:

    a. HVAC terminal units, such as VAVs
    b. HVAC controls
    c. Electrical systems and lighting systems, including daylight/occupancy sensors, and dimming controls.

B. Related Requirements:

1. Section 011000 "Summary" for Commissioning Authority responsibilities.
2. Section 011200 "Multiple Contract Summary" for Commissioning Authority responsibilities.
3. Section 013300 "Submittal Procedures" for submittal procedure requirements for commissioning process.
4. Section 017700 "Closeout Procedures" for Certificate of Construction-Phase Commissioning Process Completion submittal requirements.
5. Section 017823 "Operation and Maintenance Data" for preliminary operation and maintenance data submittal requirements.
6. Section 210800 "Commissioning of Fire Suppression" for technical commissioning requirements for fire suppression.
7. Section 220800 "Commissioning of Plumbing" for technical commissioning requirements for plumbing.
8. Section 230800 "Commissioning of HVAC" for technical commissioning requirements for HVAC.

9. Section 260800 "Commissioning of Electrical Systems" for technical commissioning requirements for electrical systems.
10. Section 270800 "Commissioning of Communications" for technical commissioning requirements for communications systems.
11. Section 280800 "Commissioning of Electronic Safety and Security" for technical commissioning requirements for electronic safety and security systems.

1.2 DEFINITIONS

A. Acceptance Criteria: Threshold of acceptable work quality or performance specified for a commissioning activity, including, but not limited to, construction checklists, performance tests, performance test demonstrations, commissioning tests, and commissioning test demonstrations.s

B. Basis-of-Design Document: A document prepared by Architect that records concepts, calculations, decisions, and product selections used to comply with Owner's Project Requirements and to suit applicable regulatory requirements, standards, and guidelines.

C. Commissioning Authority: An entity engaged by Owner, and identified in Section 011000 "Summary," to evaluate Commissioning-Process Work.

D. Commissioning Plan: A document, prepared by Commissioning Authority, that outlines the organization, schedule, allocation of resources, and documentation of commissioning requirements.

E. Commissioning: A quality-focused process for verifying and documenting that the facility and all of its systems and assemblies are planned, designed, installed, and tested to comply with Owner's Project Requirements. The requirements specified here are limited to the construction phase commissioning activities. The scope of the commissioning process is defined in Section 011000 "Summary." Section 011200 "Multiple Contract Summary."

F. Construction-Phase Commissioning-Process Completion: The stage of completion and acceptance of commissioning process when resolution of deficient conditions and issues discovered during commissioning process and retesting until acceptable results are obtained has been accomplished. Owner will establish in writing the date construction-phase commissioning-process completion is achieved. See Section 017700 "Closeout Procedures" for Certificate of Construction-Phase Commissioning Process Completion submittal requirements.

1. Commissioning process is complete when the Work specified of this Section and related Sections has been completed and accepted, including, but not limited to, the following:

    a. Completion of tests and acceptance of test results.
    b. Resolution of issues, as verified by retests performed and documented with acceptance of retest results.
    c. Comply with requirements in Section 017900 "Demonstration and Training."
    d. Completion and acceptance of submittals and reports.

G. Owner's Project Requirements: A document that details the functional requirements of a project and the expectations of how it will be used and operated, including Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information. This document is prepared either by the Owner or for the Owner by the Architect or Commissioning Authority.

H. Owner's Witness: Commissioning Authority, Owner's Project Manager, or Architect-designated witness authorized to authenticate test demonstration data and to sign completed test data forms.

I. "Systems," "Assemblies," "Subsystems," "Equipment," and "Components": Where these terms are used together or separately, they shall mean "as-built" systems, assemblies, subsystems, equipment, and components.

J. Test: Performance tests, performance test demonstrations, commissioning tests, and commissioning test demonstrations.

K. Sampling Procedures and Tables for Inspection by Attributes: As defined in ASQ Z1.4.

1.3 COMMISSIONING TEAM

A. Members Appointed by Contractor(s):

1. Commissioning Coordinator: A person or entity employed by Contractor to manage, schedule, and coordinate commissioning process.
2. Project superintendent and other employees that Contractor may deem appropriate for a particular portion of the commissioning process.
3. Subcontractors, installers, suppliers, and specialists that Contractor may deem appropriate for a particular portion of the commissioning process.
4. Appointed team members shall have the authority to act on behalf of the entity they represent.

B. Members Appointed by Owner:

1. Commissioning Authority, plus consultants that Commissioning Authority may deem appropriate for a particular portion of the commissioning process.
2. Owner representative(s), facility operations and maintenance personnel, plus other employees, separate contractors, and consultants that Owner may deem appropriate for a particular portion of the commissioning process.
3. Architect, plus employees and consultants that Architect may deem appropriate for a particular portion of the commissioning process.

1.4 INFORMATIONAL SUBMITTALS

A. Comply with requirements in Section 013300 "Submittal Procedures" for submittal procedure general requirements for commissioning process.

B. Commissioning Plan Information:

1. List of Contractor-appointed commissioning team members to include specific personnel and subcontractors performing the various commissioning requirements.
2. Schedule of commissioning activities, integrated with the Construction Schedule. Comply with requirements in Section 013200 "Construction Progress Documentation" for the Construction Schedule general requirements for commissioning process.
3. Contractor personnel and subcontractors participating in each test.
4. List of instrumentation required for each test to include identification of parties that will provide instrumentation for each test.

C. Commissioning schedule.

D. Two-week look-ahead schedules.

E. Commissioning Coordinator Letter of Authority:

1. Within 10 days after approval of Commissioning Coordinator qualifications, submit a letter of authority for Commissioning Coordinator, signed by a principal of Contractor's firm. Letter shall authorize Commissioning Coordinator to do the following:

    a. Make inspections required for commissioning process.
    b. Coordinate, schedule, and manage commissioning process of Contractor, subcontractors, and suppliers.
    c. Obtain documentation required for commissioning process from Contractor, subcontractors, and suppliers.
    d. Report issues, delayed resolution of issues, schedule conflicts, and lack of cooperation or expertise on the part of members of the commissioning team.

F. Commissioning Coordinator Qualification Data: For entity coordinating Contractor's commissioning activities to demonstrate their capabilities and experience.

1. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

G. List test instrumentation, equipment, and monitoring devices. Include the following information:

1. Make, model, serial number, and application for each instrument, equipment, and monitoring device.
2. Brief description of intended use.
3. Calibration record showing the following:

    a. Calibration agency, including name and contact information.
    b. Last date of calibration.
    c. Range of values for which calibration is valid.
    d. Certification of accuracy.

e. Certification for calibration equipment traceable to NIST.
f. Due date of the next calibration.

H. Test Reports:

1. Pre-Startup Report: Prior to startup of equipment or a system, submit signed, completed construction checklists.
2. Test Data Reports: At the end of each day in which tests are conducted, submit test data for tests performed.
3. Commissioning Issue Reports: Daily, at the end of each day in which tests are conducted, submit commissioning issue reports for tests for which acceptable results were not achieved.
4. Weekly Progress Report: Weekly, at the end of each week in which tests are conducted, submit a progress report.
5. Data Trend Logs: Submit data trend logs at the end of the trend log period.
6. System Alarm Logs: Daily, at the start of days following a day in which tests were performed, submit printout of log of alarms that occurred since the last log was printed.

I. Construction Checklists:

1. Material checks.
2. Installation checks.
3. Startup procedures, where required.

1.5 CLOSEOUT SUBMITTALS

A. Commissioning Report:

1. At Construction-Phase Commissioning Completion, include the following:

a. Pre-startup reports.
b. Approved test procedures.
c. Test data forms, completed and signed.
d. Progress reports.
e. Commissioning issue report log.
f. Commissioning issue reports showing resolution of issues.
g. Correspondence or other documents related to resolution of issues.
h. Other reports required by commissioning process.
i. List unresolved issues and reasons they remain unresolved and should be exempted from the requirements for Construction-Phase Commissioning Completion.
j. Report shall include commissioning work of Contractor.

B. Request for Certificate of Construction-Phase Commissioning Process Completion.

C. Operation and Maintenance Data: For proprietary test equipment, instrumentation, and tools to include in operation and maintenance manuals.

1.6 QUALITY ASSURANCE

A. Commissioning Coordinator Qualifications:

1. Documented experience commissioning systems of similar complexity to those contained in these documents on at least three projects of similar scope and complexity.
2. Certification of commissioning-process expertise. The following certifications are acceptable. Owner reserves the right to accept or reject certifications as evidence of qualification.

a. Certified Commissioning Authority, by AABC Commissioning Group (ACG).
b. Commissioning-Process Management Professional, by American Society of Heating, Refrigerating and Air-Conditioning Engineers.
c. Certified Commissioning Professional, by Building Commissioning Association.
d. Accredited Commissioning-Process Authority Professional, by University of Wisconsin.
e. Accredited Commissioning-Process Manager, by University of Wisconsin.
f. Accredited Green Commissioning-Process Provider, by University of Wisconsin.

B. Calibration Agency Qualifications: Certified by The American Association for Laboratory Accreditation that the calibration agency complies with minimum requirements of ISO/IEC 17025.

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT, INSTRUMENTATION, AND TOOLS

A. Test equipment and instrumentation required to perform the commissioning process shall remain the property of Contractor unless otherwise indicated.

B. Test equipment and instrumentation required to perform commissioning process shall comply with the following criteria:

1. Be manufactured for the purpose of testing and measuring tests for which they are being used and have an accuracy to test and measure system performance within the tolerances required to determine acceptable performance.
2. Calibrated and certified.

a. Calibration performed and documented by a qualified calibration agency according to national standards applicable to the tools and instrumentation being calibrated. Calibration shall be current according to national standards or within test equipment and instrumentation manufacturer's recommended intervals, whichever is more frequent, but not less than within six months of initial use on Project. Calibration tags shall be permanently affixed.

b. Repair and recalibrate test equipment and instrumentation if dismantled, dropped, or damaged since last calibrated.

3. Maintain test equipment and instrumentation.
4. Use test equipment and instrumentation only for testing or monitoring Work for which they are designed.

2.2 PROPRIETARY TEST EQUIPMENT, INSTRUMENTATION, AND TOOLS

A. Proprietary test equipment, instrumentation, and tools are those manufactured or prescribed by tested equipment manufacturer and required for work on its equipment as a condition of equipment warranty, or as otherwise required to service, repair, adjust, calibrate, or perform work on its equipment.

1. Identify proprietary test equipment, instrumentation, and tools required in the test equipment identification list submittal.
2. Proprietary test equipment, instrumentation, and tools shall become the property of Owner at Substantial Completion.

2.3 REPORT FORMAT AND ORGANIZATION

A. General Format and Organization:

1. Record report on compact disk.
2. Electronic Data: Portable document format (PDF); a single file with outline-organized bookmarks for major and minor tabs and tab contents itemized for specific reports.

B. Commissioning Report:

1. Include a table of contents and an index to each test.
2. Include major tabs for each Specification Section.
3. Include minor tabs for each test.
4. Within each minor tab, include the following:

a. Test specification.
b. Pre-startup reports.
c. Approved test procedures.
d. Test data forms, completed and signed.
e. Commissioning issue reports, showing resolution of issues, and documentation related to resolution of issues pertaining to a single test. Group data forms, commissioning issue reports showing resolution of issues, and documentation related to resolution of issues for each test repetition together within the minor tab, in reverse chronological order (most recent on top).

PART 3 - EXECUTION

3.1 PREPARATION

A. Review preliminary construction checklists and preliminary test procedures and data forms.

3.2 CONSTRUCTION CHECKLISTS

A. Construction checklists cannot modify or conflict with the Contract Documents.

B. Create construction checklists based on actual systems and equipment to be included in Project.

C. Material Checks: Compare specified characteristics and approved submittals with materials as received. Include factory tests and other evaluations, adjustments, and tests performed prior to shipment if applicable.

1. Service connection requirements, including configuration, size, location, and other pertinent characteristics.
2. Included optional features.
3. Delivery Receipt Check: Inspect and record physical condition of materials and equipment on delivery to Project site, including agreement with approved submittals, cleanliness, and lack of damage.
4. Installation Checks:

    a. Location according to Drawings and approved Shop Drawings.
    b. Configuration.
    c. Compliance with manufacturers' written installation instructions.
    d. Attachment to structure.
    e. Access clearance to allow for maintenance, service, repair, removal, and replacement without the need to disassemble or remove other equipment or building elements. Access coordinated with other building elements and equipment, including, but not limited to, ceiling and wall access panels, in a manner consistent with OSHA fall-protection regulations and safe work practices.
    f. Utility connections are of the correct characteristics, as applicable.
    g. Correct labeling and identification.
    h. Startup Checks: Verify readiness of equipment to be energized. Include manufacturer's standard startup procedures and forms.

D. Startup: Perform and document initial operation of equipment to prove that it is installed properly and operates as intended according to manufacturer's standard startup procedures, at minimum.

E. Performance Tests:

1. Static Tests: As specified elsewhere, including, but not limited to, duct and pipe leakage tests, insulation-resistance tests, and water-penetration tests.
2. Component Performance Tests: Tests evaluate the performance of an input or output of components under a full range of operating conditions.
3. Equipment and Assembly Performance Tests: Test and evaluate performance of equipment and assemblies under a full range of operating conditions and loads.
4. System Performance Tests: Test and evaluate performance of systems under a full range of operating conditions and loads.
5. Intersystem Performance Tests: Test and evaluate the interface of different systems under a full range of operating conditions and loads.

F. Deferred Construction Checklists: Obtain Owner approval of proposed deferral of construction checklists, including proposed schedule of completion of each deferred construction checklist, before submitting request for Certificate of Construction-Phase Commissioning Process Completion. When approved, deferred construction checklists may be completed after date of Construction-Phase Commissioning Completion. Include the following in a request for Certificate of Construction-Phase Commissioning Process Completion:

1. Identify deferred construction checklists by number and title.
2. Provide a target schedule for completion of deferred construction checklists.
3. Written approval of proposed deferred construction checklists, including approved schedule of completion of each deferred construction checklist.

G. Delayed Construction Checklists: Obtain Owner approval of proposed delayed construction checklists, including proposed schedule of completion of each delayed construction checklist, before submitting request for Certificate of Construction-Phase Commissioning Process Completion. When approved, delayed construction checklists may be completed after date of Construction-Phase Commissioning Completion. Include the following in a request for Certificate of Construction-Phase Commissioning Process Completion:

1. Identify delayed construction checklist by construction checklist number and title.
2. Provide a target schedule for completion of delayed construction checklists.
3. Written approval of proposed delayed construction checklists, including approved schedule of completion of each delayed construction checklist.

3.3 GENERAL EXECUTION REQUIREMENTS

A. Schedule and coordinate commissioning process with the Construction Schedule.

B. Perform activities identified in construction checklists, including tests, and document results of actions as construction proceeds.

C. Perform test demonstrations for Owner's witness. Unless otherwise indicated, demonstrate tests for 100 percent of work to which the test applies. In some instances, demonstration of a random sample of other than 100 percent of the results of a test is specified.

1. Where sampling is specified, the sampling plan and procedure for the test demonstration shall be determined using ASQ Z1.4.

a. General Inspection: Level III.
b. Special Inspection: Level S-4.
c. Acceptance Quality Limit (AQL) of 1.5.

2. The "lot size" in ASQ Z1.4 is the sum of the number of items to which the test demonstration applies, as described in the scope subparagraph of each test.
3. On determination of the sample size, the samples shall be selected randomly by Owner's witness at the time of the test demonstration.
4. Include in the Commissioning Plan a detailed list of the test demonstrations with lot and sample quantities for each test.

D. Report test data and commissioning issue resolutions.

E. Schedule personnel to participate in and perform Commissioning-Process Work.

F. Installing contractors' commissioning responsibilities include, but are not limited to, the following:

1. Operating the equipment and systems they install during tests.
2. In addition, installing contractors may be required to assist in tests of equipment and systems with which their work interfaces.

3.4 COMMISSIONING COORDINATOR RESPONSIBILITIES

A. Management and Coordination: Manage, schedule, and coordinate commissioning process, including, but not limited to, the following:

1. Coordinate with subcontractors on their commissioning responsibilities and activities.
2. Obtain, assemble, and submit commissioning documentation.
3. Conduct periodic on-site commissioning meetings. Comply with requirements in Section 013100 "Project Management and Coordination."
4. Develop and maintain the commissioning schedule. Integrate commissioning schedule into the Construction Schedule. Update Construction Schedule at specified intervals.
5. Review and comment on preliminary test procedures and data forms.
6. Report inconsistencies and issues in system operations.
7. Verify that tests have been completed and results comply with acceptance criteria, and that equipment and systems are ready before scheduling test demonstrations.
8. Direct and coordinate test demonstrations.
9. Coordinate witnessing of test demonstrations by Owner's witness.

10. Coordinate and manage training. Be present during training sessions to direct video recording, present training, and direct the training presentations of others. Comply with requirements in Section 017900 "Demonstration and Training."
11. Prepare and submit specified commissioning reports.
12. Track commissioning issues until resolution and retesting is successfully completed.
13. Retain original records of Commissioning-Process Work, organized as required for the commissioning report. Provide Owner's representative access to these records on request.
14. Assemble and submit commissioning report.

3.5 COMMISSIONING TESTING

A. Quality Control: Construction checklists, including tests, are quality-control tools designed to improve the functional quality of Project. Test demonstrations evaluate the effectiveness of Contractor's quality-control process.

B. Owner's witness will be present to witness commissioning work requiring the signature of an owner's witness, including, but not limited to, test demonstrations. Owner's project manager will coordinate attendance by Owner's witness with Contractor's published Commissioning Schedule. Owner's witness will provide no labor or materials in the commissioning work. The only function of Owner's witness will be to observe and comment on the progress and results of commissioning process.

C. Construction Checklists:

1. Complete construction checklists as Work is completed.
2. Distribute construction checklists to installing contractors before they start work.
3. Installers:

    a. Verify installation using approved construction checklists as Work proceeds.
    b. Complete and sign construction checklists weekly for work performed during the preceding week.

4. Provide Commissioning Authority access to construction checklists.

D. Installation Compliance Issues: Record as an installation compliance issue Work found to be incomplete, inaccessible, at variance with the Contract Documents, nonfunctional, or that does not comply with construction checklists. Record installation compliance issues on the construction checklist at the time they are identified. Record corrective action and how future Work should be modified before signing off the construction checklist.

E. Pre-Startup Audit: Prior to executing startup procedures, review completed installation checks to determine readiness for startup and operation. Report conditions, which, if left uncorrected, adversely impact the ability of systems or equipment to operate satisfactorily or to comply with acceptance criteria. Prepare pre-startup report for each system.

F. Test Procedures and Test Data Forms:

1. Test procedures shall define the step-by-step procedures to be used to execute tests and test demonstrations.
2. Test procedures shall be specific to the make, model, and application of the equipment and systems being tested.
3. Completed test data forms are the official records of the test results.
4. Commissioning Authority will provide to Contractor preliminary test procedures and test data forms for performance tests and commissioning tests after approval of Product Data, Shop Drawings, and preliminary operation and maintenance manual.
5. Review preliminary test procedures and test data forms, and provide comments within 14 days of receipt from Commissioning Authority. Review shall address the following:

    a. Equipment protection and warranty issues, including, but not limited to, manufacturers' installation and startup recommendations, and operation and maintenance instructions.
    b. Applicability of the procedure to the specific software, equipment, and systems approved for installation.

6. After Contractor has reviewed and commented on the preliminary test procedures and test data forms, Commissioning Authority will revise and reissue the approved revised test procedures and test data forms marked "Approved for Testing."
7. Use only approved test procedures and test data forms marked "Approved for Testing" to perform and document tests and test demonstrations.

G. Performance of Tests:

1. The sampling rate for tests is 100 percent. The sampling rate for test demonstrations is 100 percent unless otherwise indicated.
2. Perform and complete each step of the approved test procedures in the order listed.
3. Record data observed during performance of tests on approved data forms at the time of test performance and when the results are observed.
4. Record test results that are not within the range of acceptable results on commissioning issue report forms in addition to recording the results on approved test procedures and data forms according to the "Commissioning Compliance Issues" Paragraph in this Article.
5. On completion of a test, sign the completed test procedure and data form. Tests for which test procedures and data forms are incomplete, not signed, or which indicate performance that does not comply with acceptance criteria will be rejected. Tests for which test procedures and data forms are rejected shall be repeated and results resubmitted.

H. Performance of Test Demonstration:

1. Perform test demonstrations on a sample of tests after test data submittals are approved. The sampling rate for test demonstrations shall be 100 percent unless otherwise indicated in the individual test specification.

2. Notify Owner's witness at least three days in advance of each test demonstration.
3. Perform and complete each step of the approved test procedures in the order listed.
4. Record data observed during performance of test demonstrations on approved data forms at the time of demonstration and when the results are observed.
5. Provide full access to Owner's witness to directly observe the performance of all aspects of system response during the test demonstration. On completion of a test demonstration, sign the completed data form and obtain signature of Owner's witness at the time of the test to authenticate the reported results.
6. Test demonstration data forms not signed by Contractor and Owner's witness at the time of the completion of the procedure will be rejected. Test demonstrations for which data forms are rejected shall be repeated and results shall be resubmitted.

    a. Exception for Failure of Owner's Witness to Attend: Failure of Owner's witness to be present for agreed-on schedule of test demonstration shall not delay Contractor. If Owner's witness fails to attend a scheduled test, Contractor shall proceed with the scheduled test. On completion, Contractor shall sign the data form for Contractor and for Owner's witness, and shall note the absence of Owner's witness at the scheduled time and place.

7. False load test requirements are specified in related sections.

    a. Where false load testing is specified, provide temporary equipment, power, controls, wiring, piping, valves, and other necessary equipment and connections required to apply the specified load to the system. False load system shall be capable of steady-state operation and modulation at the level of load specified. Equipment and systems permanently installed in this work shall not be used to create the false load without Architect's written approval.

I. Deferred Tests:

1. Deferred Test List: Identify, in the request for Certificate of Construction-Phase Commissioning Process Completion, proposed deferred tests or other tests approved for deferral until specified seasonal or other conditions are available. When approved, deferred tests may be completed after the date of Construction-Phase Commissioning Completion. Identify proposed deferred tests in the request for Certificate of Construction-Phase Commissioning Process Completion as follows:

    a. Identify deferred tests by number and title.
    b. Provide a target schedule for completion of deferred tests.

2. Schedule and coordinate deferred tests. Schedule deferred tests when specified conditions are available. Notify Architect and Commissioning Authority at least three working days (minimum) in advance of tests.

3. Where deferred tests are specified, coordinate participation of necessary personnel and of Architect, Commissioning Authority, and Owner's witness. Schedule deferred tests to minimize occupant and facility impact. Obtain Architect's approval of the proposed schedule.

J. Delayed Tests:

1. Delayed Test List: Identify, in the request for Certificate of Construction-Phase Commissioning Process Completion, proposed delayed tests. Obtain Owner approval of proposed delayed tests, including proposed schedule of completion of each delayed test, before submitting request for Certificate of Construction-Phase Commissioning Process Completion. Include the following in the request for Certificate of Construction-Phase Commissioning Process Completion:

    a. Identify delayed tests by test number and title.
    b. Written approval of proposed delayed tests, including approved schedule of completion of delayed tests.

2. Schedule and coordinate delayed tests. Schedule delayed tests when conditions that caused the delay have been rectified. Notify Architect and Commissioning Authority at least three working days (minimum) in advance of tests.
3. Where delayed tests are approved, coordinate participation of necessary personnel and of Architect, Commissioning Authority, and Owner's witness. Schedule delayed tests to minimize occupant and facility impact. Obtain Architect's approval of the proposed schedule.

K. Commissioning Compliance Issues:

1. Test results that are not within the range of acceptable results are commissioning compliance issues.
2. Track and report commissioning compliance issues until resolution and retesting are successfully completed.
3. If a test demonstration fails, determine the cause of failure. Direct timely resolution of issue and then repeat the demonstration. If a test demonstration must be repeated due to failure caused by Contractor work or materials, reimburse Owner for billed costs for the participation in the repeated demonstration.
4. Test Results: If a test demonstration fails to meet the acceptance criteria, perform the following:

    a. Complete a commissioning compliance issue report form promptly on discovery of test results that do not comply with acceptance criteria.
    b. Submit commissioning compliance issue report form within 24 hours of the test.
    c. Determine the cause of the failure.
    d. Establish responsibility for corrective action if the failure is due to conditions found to be Contractor's responsibility.

5. Commissioning Compliance Issue Report: Provide a commissioning compliance issue report for each issue. Do not report multiple issues on the same commissioning compliance issue report.

a. Exception: If an entire class of devices is determined to exhibit the identical issue, they may be reported on a single commissioning compliance issue report. (For example, if all return-air damper actuators that are specified to fail to the open position are found to fail to the closed position, they may be reported on a single commissioning issue report. If a single commissioning issue report is used for multiple commissioning compliance issues, each device shall be identified in the report, and the total number of devices at issue shall be identified.
b. Complete and submit Part 1 of the commissioning compliance issue report immediately when the condition is observed.
c. Record the commissioning compliance issue report number and describe the deficient condition on the data form.
d. Resolve commissioning compliance issues promptly. Complete and submit Part 2 of the commissioning compliance issue report when issues are resolved.

6. Diagnose and correct failed test demonstrations as follows:

a. Perform diagnostic tests and activities required to determine the fundamental cause of issues observed.
b. Record each step of the diagnostic procedure prior to performing the procedure. Update written procedure as changes become necessary.
c. Record the results of each step of the diagnostic procedure.
d. Record the conclusion of the diagnostic procedure on the fundamental cause of the issue.
e. Determine and record corrective measures.
f. Include diagnosis of fundamental cause of issues in commissioning compliance issue report.

7. Retest:

a. Schedule and repeat the complete test procedure for each test demonstration for which acceptable results are not achieved. Obtain signature of Owner's witness on retest data forms. Repeat test demonstration until acceptable results are achieved. Except for issues that are determined to result from design errors or omissions, or other conditions beyond Contractor's responsibility, compensate Owner for direct costs incurred as the result of repeated test demonstrations to achieve acceptable results.
b. For each repeated test demonstration, submit a new test data form, marked "Retest."

8. Do not correct commissioning compliance issues during test demonstrations.

a. Exceptions will be allowed if the cause of the issue is obvious and resolution can be completed in less than five minutes. If corrections are made under this exception, note the deficient conditions on the test data form and issue a commissioning compliance issue report. A new test data form, marked "Retest," shall be initiated after the resolution has been completed.

3.6 COMMISSIONING MEETINGS

A. Commissioning Authority will schedule and conduct commissioning meetings. Comply with requirements in Section 013100 "Project Management and Coordination."

3.7 SEQUENCING

A. Sequencing of Commissioning Verification Activities: For a particular material, item of equipment, assembly, or system, perform the following in the order listed unless otherwise indicated:

1. Construction Checklists:

    a. Material checks.
    b. Installation checks.
    c. Startup, as appropriate. Some startup may depend on component performance. Such startup may follow component performance tests on which the startup depends.
    d. Performance Tests:

        1) Static tests, as appropriate.
        2) Component performance tests. Some component performance tests may depend on completion of startup. Such component performance tests may follow startup.
        3) Equipment and assembly performance tests.
        4) System performance tests.
        5) Intersystem performance tests.

2. Commissioning tests.

B. Before performing commissioning tests, verify that materials, equipment, assemblies, and systems are delivered, installed, started, and adjusted to perform according to construction checklists.

C. Verify readiness of materials, equipment, assemblies, and systems by performing tests prior to performing test demonstrations. Notify Architect if acceptable results cannot be achieved due to conditions beyond Contractor's control or responsibility.

D. Commence tests as soon as installation checks for materials, equipment, assemblies, or systems are satisfactorily completed. Tests of a particular system may proceed prior to completion of other systems, provided the incomplete work does not interfere with successful execution of test.

3.8 SCHEDULING

A. Commence commissioning process as early in the construction period as possible.

B. Commissioning Schedule: Integrate commissioning activities into Construction Schedule. See Section 013200 "Construction Progress Documentation."

1. Include detailed commissioning activities in monthly updated Construction Schedule and short-interval schedule submittals.
2. Schedule the start date and duration for the following commissioning activities:

    a. Submittals.
    b. Preliminary operation and maintenance manual submittals.
    c. Installation checks.
    d. Startup, where required.
    e. Performance tests.
    f. Performance test demonstrations.
    g. Commissioning tests.
    h. Commissioning test demonstrations.

3. Schedule shall include a line item for each installation check, startup, and test activity specific to the equipment or systems involved.
4. Determine milestones and prerequisites for commissioning process. Show commissioning milestones, prerequisites, and dependencies in monthly updated critical-path-method construction schedule and short-interval schedule submittals.

C. Two-Week Look-Ahead Commissioning Schedule:

1. Two weeks prior to the beginning of tests, submit a detailed two-week look-ahead schedule. Thereafter, submit updated two-week look-ahead schedules weekly for the duration of commissioning process.
2. Two-week look-ahead schedules shall identify the date, time, beginning location, Contractor personnel required, and anticipated duration for each startup or test activity.
3. Use two-week look-ahead schedules to notify and coordinate participation of Owner's witnesses.

D. Owner's Witness Coordination:

1. Coordinate Owner's witness participation via Architect.
2. Notify Architect of commissioning schedule changes at least two work days in advance for activities requiring the participation of Owner's witness.

3.9 COMMISSIONING REPORTS

A. Test Reports:

1. Pre-startup reports include observations of the conditions of installation, organized into the following sections:

    a. Equipment Model Verification: Compare contract requirements, approved submittals, and provided equipment. Note inconsistencies.

b. Preinstallation Physical Condition Checks: Observe physical condition of equipment prior to installation. Note conditions including, but not limited to, physical damage, corrosion, water damage, or other contamination or dirt.
c. Preinstallation Component Verification Checks: Verify components supplied with the equipment, preinstalled or field installed, are correctly installed and functional. Verify external components required for proper operation of equipment correctly installed and functional. Note missing, improperly configured, improperly installed, or nonfunctional components.
d. Summary of Installation Compliance Issues and Corrective Actions: Identify installation compliance issues and the corrective actions for each. Verify that issues noted have been corrected.
e. Evaluation of System Readiness for Startup: For each item of equipment for each system for which startup is anticipated, document in summary form acceptable to Owner completion of equipment model verification, preinstallation physical condition checks, preinstallation component verification checks, and completion of corrective actions for installation compliance issues.

2. Test data reports include the following:

a. "As-tested" system configuration. Complete record of conditions under which the test was performed, including, but not limited to, the status of equipment, systems, and assemblies; temporary adjustments and settings; and ambient conditions.
b. Data and observations, including, but not limited to, data trend logs, recorded during the tests.
c. Signatures of individuals performing and witnessing tests.
d. Data trend logs accumulated overnight from the previous day of testing.

3. Commissioning Compliance Issue Reports: Report as commissioning compliance issues results of tests and test demonstrations that do not comply with acceptance criteria. Report only one issue per commissioning compliance issue report. Use sequentially numbered facsimiles of commissioning compliance issue report form included in this Section, or other form approved by Owner. Distribute commissioning compliance issue reports to parties responsible for taking corrective action. Identify the following:

a. Commissioning compliance issue report number. Assign unique, sequential numbers to individual commissioning compliance issue reports when they are created, to be used for tracking.
b. Action distribution list.
c. Report date.
d. Test number and description.
e. Equipment identification and location.
f. Briefly describe observations about the performance associated with failure to achieve acceptable results. Identify the cause of failure if apparent.
g. Diagnostic procedure or plan to determine the cause (include in initial submittal)
h. Diagnosis of fundamental cause of issues as specified below (include in resubmittal).

i. Fundamental cause of unacceptable performance as determined by diagnostic tests and activities.
j. When issues have been resolved, update and resubmit the commissioning issue report forms by completing Part 2. Identify resolution taken and the dates and initials of the persons making the entries.
k. Schedule for retesting.

4. Weekly progress reports include information for tests conducted since the preceding report and the following:

a. Completed data forms.
b. Equipment or system tested, including test number, system or equipment tag number and location, and notation about the apparent acceptability of results.
c. Activities scheduled but not conducted per schedule.
d. Commissioning compliance issue report log.
e. Schedule changes for remaining Commissioning-Process Work, if any.

5. Data trend logs shall be initiated and running prior to the time scheduled for the test demonstration.

a. Trend log data format shall be multiple data series graphs. Where multiple data series are trend logged concurrently, present the data on a common horizontal time axis. Individual data series may be presented on a segmented vertical axis to avoid interference of one data series with another, and to accommodate different axis scale values. Graphs shall be sufficiently clear to interpret data within the accuracy required by the acceptance criteria.
b. Attach to the data form printed trend log data collected during the test or test demonstration.
c. Record, print out, and attach to the data form operator activity during the time the trend log is running. During the time the trend log is running, operator intervention not directed by the test procedure invalidates the test results.

6. System Alarm Logs: Record and print out a log of alarms that occurred since the last log was printed. Evaluate alarms to determine if the previous day's work resulted in any conditions that are not considered "normal operation."

a. Conditions that are not considered "normal operation" shall be reported on a commissioning issue report attached to the alarm log. Resolve as necessary. The intent of this requirement is to discover control system points or sequences left in manual or disabled conditions, equipment left disconnected, set points left with abnormal values, or similar conditions that may have resulted from failure to fully restore systems to normal, automatic control after test completion.

3.10 CERTIFICATE OF CONSTRUCTION-PHASE COMMISSIONING PROCESS COMPLETION

A. When Contractor considers that construction-phase commissioning process, or a portion thereof which Owner agrees to accept separately, is complete, Contractor shall prepare and submit to Owner and Commissioning Authority through Architect a comprehensive list of items to be completed or corrected. Failure to include an item on such list does not alter Contractor's responsibility to compete commissioning process.

B. On receipt of Contractor's list, Commissioning Authority will make an inspection to determine whether the construction-phase commissioning process or designated portion thereof is complete. If Commissioning Authority's inspection discloses items, whether included on Contractor's list, which is not sufficiently complete as defined in "Construction-Phase Commissioning Process Completion" Paragraph in the "Definitions" Article, Contractor shall, before issuance of the Certificate of Construction-Phase Commissioning Process Completion, complete or correct such items on notification by Commissioning Authority. In such case, Contractor shall then submit a request for another inspection by Commissioning Authority to determine construction-phase commissioning process completion.

C. Contractor shall promptly correct deficient conditions and issues discovered during commissioning process. Costs of correcting such deficient conditions and issues, including additional testing and inspections, the cost of uncovering and replacement, and compensation for Architect's and Commissioning Authority's services and expenses made necessary thereby, shall be at Contractor's expense.

D. When construction-phase commissioning process or designated portion is complete, Commissioning Authority will prepare a Certificate of Construction-Phase Commissioning Process Completion that shall establish the date of completion of construction-phase commissioning process. Certificate of Construction-Phase Commissioning Process Completion shall be submitted prior to requesting inspection for determining date of Substantial Completion.

END OF SECTION 019113

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.

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. Review and finalize selective demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
3. Review areas where existing construction is to remain and requires protection.
4. Review and finalize protection requirements.
5. Review procedures for noise control and dust control.
6. Review storage, protection, and accounting for items to be removed for salvage or reinstallation.

1.6 INFORMATIONAL SUBMITTALS

A. Survey of Existing Conditions: Submit survey.

B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection , for dust control and , for noise control. Indicate proposed locations and construction of barriers.

C. 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.

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.

1. Before selective demolition, Owner will remove the following items:

a. Glass markerboards.

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 is included in Section 003126 "Existing Hazardous Material Information" for review and use. Examine report to become aware of locations where hazardous materials are present.

a. Hazardous material remediation is specified in Section 028213 "Asbestos Abatement."

E. On-site sale of removed items or materials is not permitted.

1.9 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor before proceeding. Existing warranties include the following:

1. 60-mil fully adhered EPDM membrane roofing system.

B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

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. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.

1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

D. Steel Tendons: Locate tensioned steel tendons and include recommendations for de-tensioning.

E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video, measured drawings. Comply with Section 013233 "Photographic Documentation."

1. Inventory and record the condition of items to be removed for salvage or reinstallation. Photograph or video conditions that might be misconstrued as damage caused by removal.
2. Photograph or video existing conditions of adjoining construction including finish surfaces, that might be misconstrued as damage caused by selective demolition operations or removal of items for salvage or reinstallation.

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. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
3. Cover and protect furniture, furnishings, and equipment that have not been removed.

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.

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. Owner will arrange to shut off indicated utilities when requested by Contractor.
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:

    a. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment and components; when appropriate, reinstall, reconnect, and make equipment operational.
    b. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and components and deliver to Owner.

3.4 SALVAGE/REINSTALL

A. Removed and Salvaged Items:

1. Clean salvaged items.

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 storage area designated by Owner.
5. Protect items from damage during transport and storage.

B. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

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 30 minutes after flame-cutting operations and two hours after roofing work.
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." Do not use methods requiring solvent-based adhesive strippers.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.

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. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

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 028213 - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. This project consists of the removal of asbestos materials from the University at Buffalo's North Campus, Furnas Hall. Work areas are designated on the contract drawings and in accordance with sampling and testing specifically performed for this project. Copies of all test reports are available for review at the Offices of the Architect.

B. This section specifies the procedures for removal of existing asbestos containing/contaminated building materials, disposal of removed materials, and the encapsulation of building surfaces and/or components where asbestos containing materials have been removed AFTER FINAL CLEARANCE AIR MONITORING HAS BEEN SUCCESSFUL.

C. General Note: The amended version of NYS Code Rule 56 effective March 21, 2007 shall be followed until such time that a new revision is put into place, at which time the most current version of the regulation shall govern.

D. Disturbance or dislocation of asbestos-containing materials may cause asbestos fibers to be released into building's atmosphere, thereby creating a health hazard to work persons and building occupants. Consistent with asbestos-control work, Contractor shall appraise all of his workers, supervisory personnel, subcontractors and consultants who will be at job site of the seriousness of the hazard and of proper work procedures which must be followed.

E. Where in the performance of the work, workers, supervisory personnel, subcontractors, or consultants may encounter, disturb or otherwise function in the immediate vicinity of any identified asbestos-containing materials, appropriate, continuous measures as necessary to protect all building occupants from the hazard of exposure to airborne asbestos shall be taken. Such measures shall include the procedures and methods described herein, regulations of the U.S. Occupational Safety & Health Administration (OSHA), U.S. Environmental Protection Agency (EPA), and the New York State Department of Labor.

1.3 SCOPE OF WORK:

A. All work under this contract shall be performed in strict conformance with applicable federal, state and local rules, laws and regulations including but not limited to:

1. 12 NYCRR Part 56 (Code Rule 56)
2. 29 CFR Part 1926 (OSHA)
3. 40 CFR Part 61, Subparts A & M (NESHAPS)

B. The specifications are to be used in conjunction with the drawings for this project. A copy of the specifications, drawings and test reports shall be maintained at the job site at all times.

C. The contractor shall verify all job conditions and all material quantities prior to bid submission.

D. Applicable and Site Specific Variance: The owner has not applied for a site specific variance for this project. Any variance application prepared by the contractor or its agent must be submitted to the owner for approval prior to submission to the State of New York Department of Labor Engineering Services for processing. The owner shall bear no additional cost as a result of the approval of, the denial of, and/or conditions set forth within the site specific variance.

E. The contractor shall furnish all notification fees, labor, materials, services, employee training, permits, insurance, and equipment to remove asbestos containing material and properly remove same for the site in accordance with current regulations.

F. The following items apply to this work:

1. The location of any on-site storage of material, equipment and dumpster/waste trailer shall be coordinated with General Contractor and approved by Owner.

G. The contractor shall furnish all labor, materials, services, employee training, permits, notifications insurance and equipment to remove asbestos containing materials from the areas indicated on contract drawings.

H. Contractor shall provide and assure that the quality of work practices and procedures are consistent with the below listed agencies. Contractor shall utilize the latest edition, including all addenda, revisions and supplements for all regulatory agencies codes, etc., including but not limited to:

1. Environmental Protection Agency (EPA).
2. Occupational Safety and Health Administration
3. State of New York codes and laws.
4. All local codes.

1.4 QUALIFICATIONS:

A. The following qualifications must be met by all prospective bidders:

1. Contractor Experience: Contractor shall have completed a minimum of three asbestos abatement projects of similar scope and nature, and hold a valid Asbestos Handling License issued by the Commissioner of the State of New York Department of Labor. Provide project names, locations and Owner

Representative's Name and Phone Number. The contractor shall have held and currently hold a valid license for the past five consecutive years.

2. Personnel: supervisors, foreman and workers shall have received training in applicable regulations and expertise in safety and environmental protection by participation and successful completion of a workers or contractors/supervisors training course offered by an EPA approved educational institution, and hold an Asbestos Handling Certificate issued by the New York State Department of Labor.
3. Personnel Experience: all personnel including supervisors, foremen, and workers shall be experienced in asbestos abatement work as evidenced through participation in a minimum of three previous projects.

1.5 REGULATIONS:

A. All work under this contract shall be performed in strict accordance with all applicable federal, state, and local regulations, standards, and codes governing asbestos abatement and any other trade work done in conjunction with the abatement.

B. The most recent edition of any relevant regulation, standard, document, or code shall be applicable to the work. Where conflict among the requirements or with these specifications exists, the most stringent requirements are applicable.

C. Copies of all relevant standards, regulations, codes, and other applicable documents and subsequent amendments thereto, listed in this section and including this Specification, shall be available at the work site.

1.6 SPECIFIC REQUIREMENTS:

A. Occupational Safety and Health Administration (OSHA)

1. Title 29 CFR 1926.1101, occupational exposure to asbestos construction standard.
2. Title 29 CFR Section 1910.134, general industry standard for respiratory protection.
3. Title 29 CFR Section 1910.20, access to employee exposure and medical records.
4. Title 29 CFR Section 1910.1200, hazard communication.

B. Environmental Protection Agency (EPA)

1. Title 40 CFR Part 61, Subparts A and M, national emission standard for asbestos.

C. New York State Requirements

1. Part 56 of Title 12 of the official compilation of codes, rules and regulations - The amended version of Code Rule 56 dated March 21, 2007 or a current Site Specific Variance.
2. New York State Department of Environmental Conservation (NYSDEC), Title 6 NYCRR, Part 360 and 364, the New York State hazardous waste management regulations.
3. Part 23 of Title 12 of the Official Compilation of Codes, Rules and Regulations.

D. National Institute for Occupational Safety and Health (NIOSH)

1. Approval of respirators as per 42 CFR PART 84.

1.7 GENERAL REQUIREMENTS:

A. Licenses

1. Contractor shall maintain current licenses and permits as required by applicable state or local jurisdictions for the removal, transportation, disposal, or other regulated activity relative to this Contract.

B. New And Amended Regulations

1. Any and all new or amended federal, state, or local regulations becoming effective during this project and not listed are to be considered as part of this specification. Where copies of standards are needed for proper performance of the work, the Contractor is required to obtain such copies directly from the publication source. Although certain copies of standards needed for enforcement of the requirements may be required submittals, the Owner reserves the right to require the contractor to submit additional copies of these standards as necessary for enforcement of the requirements.

C. Abbreviations And Names:

1. Where acronyms or abbreviations are used but not identified in specifications or other contract documents they are defined to mean the industry recognized name or trade association, standards generating organization, governing owner or other entity applicable to context of text provision. Refer to "Encyclopedia of Associations," published by Gale Research Co., available in large libraries. The following acronyms or abbreviations as referenced in Contract Documents are defined to mean the associated names. Both names and addresses are subject to change, and are believed to be, but not assured to be, accurate and up-to-date as of date of Contract Documents:

1.8 NOTICES AND PERMITS:

A. The contractor shall submit and apply for all required notifications and permits as may be required, including but not limited to, NYSDOL, EPA NESHAPS, building occupants, any required OSHA notifications and any required permits required by the local municipality.

1.9 SUBMITTALS:

A. The Contractor shall submit five (5) separately bound copies of all submittals to the Owner or Owner's representative for approval. A copy of all approved submittals is to be maintained at the work site.

B. Two (2) copies of each submittal shall be returned to the Contractor by the Owner or Owner's representative with the following notation:

1. Rejected-Revise and Resubmit:

a. The Contractor shall make the necessary corrections to the submittal or select alternate removal methods, materials, and/or equipment and resubmit two (2) complete copies.

2. Approved as noted:

a. The Contractor may proceed with removal method, materials and/or equipment in accordance with the changes/requirements noted on the submittal. The Contractor shall resubmit two (2) copies of the submittal indicating compliance with notations prior to final payment.

3. Approved:

a. The Contractor may proceed with the project and use of removal method, materials and/or equipment.

C. The Contractor shall not proceed with removal method, materials and/or equipment prior to receipt of approval. Any removal method, material and/or equipment used which are not in compliance with "approved" or "approved as noted" shall be at no cost to the Owner.

D. The Contractor shall submit to the Owner or Owner's representative 15 working days before the start of work:

1. Employee information:

a. A table containing the following information: name, address, asbestos certificate numbers, and certificate expiration dates for each Contractor's employees proposed to be employed on the project.
b. Copies of Certifying Physicians report indicating ability to safely don respiratory protection and perform work required for each Contractor's employee employed on the project.

c. Affidavits indicating that each Contractor's employee employed on the project has passed a physical exam for use of a respirator and has been provided with a qualitative/quantitative fit test.
d. Affidavits indicating completion of training and certification of each Contractor's employee employed on the project, including but not limited to DOH-2832 forms.
e. Copies of New York State Department of Labor Asbestos Supervisors Certificate for each proposed Contractor's supervisor and New York State Department of Labor Asbestos Handling Certifications for each Contractor's employee working on this project.

2. Copies of the Contractor's written respiratory program, qualitative fit test procedures and Safety Manual.
3. Copies of the Contractor's New York State Asbestos Contractor's license.
4. Copies of required regulatory agency notifications.
5. Copies of the 6 NYCRR part 364 NYS Waste Transporter Permit for proposed transporter.
6. Copies of a detailed work plan including:

   a. Shop drawing depicting the delineation of proposed regulated abatement work area(s), location(s) of decontamination facility enclosure(s), negative air ventilation exhaust location(s), path(s) of waste removal egress, location of waste disposal dumpster(s), location of available electric and water supplies.

   b. A summary of proposed work area containment measures and removal procedures in compliance with 12NYCRR56 for each proposed work area.

7. Contractor's Emergency Plan as detailed in Section 2.1 of this specification.
8. Copies of applicable Negative Exposure Assessment(s) and/or the accreditation of the laboratory retained by the Contractor to analyze Personal Exposure Monitoring samples during the project duration.
9. The Contractor shall provide Manufacturers Data as follows:

   a. HEPA Vacuums: submit product data; use instructions and recommendations from manufacturer of vacuum(s) for use.
   b. Surfactant: submit product data; use instructions and recommendations from manufacturer of surfactant for use.
   c. Encapsulant: submit product data; use instructions and recommendations from the manufacturer of encapsulant intended for use.
   d. NESHAPS Certification: Submit certification for manufacturer of surfactant or encapsulant that, to the extent required by this specification, the material, if used in accordance with manufacturer's instructions, will wet asbestos containing materials to which it is applied as required by the National Emission Standard for Hazardous Pollutants (NESHAPS) Asbestos Regulation (40 CFR 61, Subpart M).

e. Material Safety Data Sheets: submit the materials safety data sheet, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for each chemical material including surfactant and encapsulating material proposed for use on the work. Include a separate attachment for each sheet indicating the specific worker protective equipment the Contractor proposes for use with the material indicated.

f. Other equipment: submit product data; use instructions and recommendations from manufacturer for any mechanical equipment proposed to be used for the removal of asbestos containing materials (e.g. Power tools used to drill, cut, or otherwise disturb asbestos material in regulated abatement work areas, shall be manufacturer equipped with HEPA-filtered local exhaust ventilation.)

E. Following the completion of abatement activities, the Contractor shall submit the following Project Close-Out Documentation:

1. Summary of project location, description, commencement and completion dates, and the amount of asbestos or asbestos material that was removed, enclosed, encapsulated, repaired, disturbed, or handled.
2. Work area daily entry/exit logs.
3. Asbestos Abatement Contractor's Daily Project Logs.
4. Personnel paperwork for each Employee actually utilized on project including:

   a. Copy of valid respirator fit test issued within the twelve month period preceding the conclusion of abatement.
   b. Copy of Certifying Physicians report indicating ability to safely don respiratory protection issued within the previous 12 month period.
   c. An affidavit indicating completion of training and certification of each Contractor's employee employed on the project.

5. Personal Exposure Monitoring Records for the project.
6. Copies of all notifications and amendments.
7. Copies of all variances, amendments and re-openings used on the project.
8. The name an address of any sites that were used for the interim storage of asbestos or asbestos waste materials prior to final deposit or disposal.
9. All receipted waste shipment records and completed trucking/manifest forms which have been signed and certified by the Landfill's Owner/Manager as having accepted the shipped waste.

1.10 JOB CONDITIONS:

A. Postings: Display the following documents in the clean changing area, in public view, for the full duration of the work:

1. All Applicable and/or Site Specific Variances to be used on project.
2. Respiratory protection program.
3. Post emergency action plan at the work site. This plan shall also include telephone numbers for hospital, doctor and fire company.
4. Provide Sign In and Out sheets for all persons entering the work area.
5. All notices and permits as required by 12 NYCRR Part 56.
6. Personal air monitoring data.

1.11 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. The contractor shall be responsible for the delivery, storage and handling of all materials required to accomplish the work.

B. The contractor shall deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name.

C. The contractor shall store all materials subject to damage off the ground, away from wet or damp surfaces, and under cover sufficient to prevent damage or contamination.

D. Damaged or deteriorated materials shall not be used and shall be removed from the premises at the contractor's expense. Materials that become contaminated with asbestos shall be disposed of in compliance with the provisions of this specification.

PART 2 - PRODUCTS AND PROCEDURES

2.1 EMERGENCY PLANNING:

A. The Contractor shall prepare an emergency preparedness plan detailing at least the information required in this section and in any applicable federal, state or local regulations.

B. Emergency planning shall be developed prior to abatement initiation and submitted to the Owner or Owner's representative for review under the requirements of section 1.10 of this specification.

C. Emergency procedures shall be in written form and prominently posted at the work site. Everyone, prior to entering the work area, must read and sign these procedures to acknowledge receipt review and understanding of work site layout, location of emergency exits, and emergency procedures.

D. Emergency planning shall include written notification of police, fire and emergency medical personnel of planned abatement activities, work schedule and layout of work area, particularly barriers that may affect response capabilities.

E. Emergency planning shall include considerations of blood borne pathogens, fire, power failure, explosion, toxic atmospheres, electrical hazards, slips, trips, and falls, confined

spaces, spills of releases of hazardous materials and heat related injury. Written procedures shall be developed and employee training in procedures shall be provided.

F. Employees shall be trained in evacuation procedures in the event of work place emergencies.

1. For Non-life-threatening Situations: Employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers, if necessary, before exiting the work place to obtain proper medical treatment.
2. For Life-threatening Injury or Illness: Worker decontamination shall take least priority. After measures to stabilize the injured worker, he/she shall be removed from the work place and secure proper medical treatment.
3. In the absence of an infirmary, clinic, hospital or physician, that is reasonably accessible in terms of time and distance to the worksite, which is available for the treatment of injured employees, a person who has a valid certificate in first-aid training shall be available at the worksite to render first aid.

G. Telephone numbers of all emergency response personnel shall be prominently posted at the work site, along with the location of the nearest telephone.

2.2 ABATEMENT PRODUCTS:

A. Polyethylene Sheeting

1. Polyethylene sheeting shall be a minimum of 6 mil thickness, in widths selected to minimize joints.
2. All polyethylene sheeting shall be fire retardant/rated.

B. Attachment Materials for Polyethylene: Method of attaching polyethylene sheeting shall be agreed upon in advance by the Contractor and Owner and selected to minimize damage to equipment and surfaces. Method of attachment may include any combination of duct tape or other waterproof tape, furring strips, spray glue, staples, nails, screws, or other effective procedures capable of sealing adjacent sheets of polyethylene and capable of sealing polyethylene to dissimilar finished or unfinished surfaces under both wet and dry conditions (including the use of amended water).

C. Disposal Bags: 6 mil polyethylene, pre-printed with labels as required by OSHA Requirement 29 CFR 1926.1101 (k)(8) shall contain the following information:

DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
NO NOT BREATHE DUST
AVOID CREATING DUST

D. Disposal Drums: metal or fiberboard with locking ring tops, with warning labels as required by OSHA (see 29 CFR 1926.1101 (k)(8)).

1. Stick-On Labels: consistent with OSHA Requirements (see 29 CFR 1926.1101 (k)(8)) for drums, in addition to the waste generator's name and location.

E. Warning Signs: required by OSHA 29 CFR 1926.1101 (k)(7) and shall contain the following information:

DANGER
ASBESTOS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
AUTHORIZED PERSONNEL ONLY
WEAR RESPIRATORY PROTECTION AND
PROTECTIVE CLOTHING IN THIS AREA

F. Glove Bags: Minimum six mil polyethylene bag for removal of pipe lagging/insulation. Bags shall have long sleeve gloves, a tool pouch, and an opening for water application. Bag shall be labeled with the same label as the disposal bag (see paragraph 2.2 C of this section).

G. Surfactant (Wetting Agent): 50/50 mixture of Polyoxyethylene Ether and Polyoxyethylene Ester, or equivalent, mixed in a proportion of 1 fluid ounce to 5 gallons of water or as specified by manufacturer. (An equivalent surfactant shall be understood to mean a material with a surface tension of 29 dynes/cm as tested in its properly mixed concentration, using ASTM Method D1331-56 "Surface and Interfacial Tension of Solutions of Surface Active Agents"). Where work area temperature may cause freezing of the amended water solution, the addition of Ethylene Glycol in amounts sufficient to prevent freezing is permitted. Encapsulating Agent: provide a bridging type encapsulant specifically designed for application to ACM. Product shall be rated as acceptable for use intended when tested in accordance with draft ASTM proposed Standard E-6.21 Guide or evaluation of encapsulant for friable ACM building materials. All materials used shall have a flame spread of less than 25 when dry (when tested in accordance with ASTM-84).

2.3 GENERAL EQUIPMENT:

A. A sufficient supply of disposable mops, rags, and sponges for work area decontamination shall be available.

B. A sufficient supply of scaffolding, ladders, lifts, and hand tools, (e.g., scrapers, wire cutters, brushes, utility knives, wire saws, etc.) shall be provided as needed.

C. Low pressure or airless sprayers.

D. Rubber dustpans and rubber squeegees.

E. Brushes utilized for removing loose asbestos containing material shall have nylon or fiber bristles, not metal.

F. HEPA filtered vacuum cleaners with attachments.

2.4 PERSONNEL PROTECTION:

A. Full body disposable protective clothing, including head, body, and foot covering (unless using footwear as described below) consisting of material impenetrable by asbestos fibers (Tyvek or equivalent) shall be provided to all workers and authorized visitors in sizes adequate to accommodate movement without tearing. Provide a sufficient number for all required changes, for all workers and authorized visitors in the work area.

B. Additional safety equipment (e.g., hard hats meeting the requirements of ANSI Standard Z89.1-1981, eye protection meeting the requirements of ANSI Standard Z87.1-1979, safety shoes meeting the requirements of ANSI Standard Z41.1-1967, disposable PVC gloves or other work gloves), shall be provided to all workers and authorized visitors.

C. Nonskid footwear shall be provided to all abatement workers. Disposable clothing shall be adequately sealed to the footwear to prevent body contamination.

2.5 TRAINING:

A. All workers shall have current Asbestos Handling Certificates.

B. Supervisory personnel shall be Competent People, as defined in 29 CFR 1926.1101(a), (b) and 29 CFR 1926.32(f) and shall receive training as required in 29 CFR 1926.1101(o)(4) & 40 CFR 763.Subpart E, Appendix C. Additionally, Supervisors shall be a certified Supervisor under 12 NYCRR Part 56 requirements.

2.6 RESPIRATORY PROTECTION:

A. All respiratory protection shall be provided to workers in accordance with the submitted written respiratory protection program, which includes all items in OSHA 29 CFR 1926.1101(h) and 1910.134(c). This program shall be posted at the work site.

B. Workers shall be provided with personally issued, individually identified (marked with waterproof designations) respirators.

C. Respirators shall be selected that meet the following level of protection requirements: The workers will not be exposed to fibers in excess of 0.1 f/cc, 8-Hour TWA.

D. After the establishment of the personal decontamination area, full personal protective equipment (PPE) in compliance with current OSHA regulations shall be worn in regulated abatement work areas during preparation activities, for all friable OSHA Class I or Class II asbestos projects. Asbestos abatement contractor's respirator selection, filter selection, medical surveillance and respiratory training must be consistent with current OSHA regulations. Appropriate respiratory protection is also required of authorized visitors in accordance with this Part.

E. Fit Testing

1. Workers must perform positive and negative air pressure fit tests each time a respirator is put on, whenever the respirator design so permits. Powered air-purifying respirators, if used, shall be tested for adequate flow as specified by the manufacturer.
2. Workers shall be given a qualitative fit test in accordance with procedures detailed in the OSHA Regulation 29 CFR 1926.1101, for all respirators to be used on this abatement project. The irritant fume protocol will be utilized. An appropriately administered quantitative fit test may be substituted for the qualitative fit test.
3. No one wearing a beard or other facial hair, which will reduce the performance of the respirator, shall be permitted to don a respirator and enter the work area.
4. Respirator cartridges shall be replaced with new cartridges each time the worker exits the work area. Used cartridges shall be disposed of as asbestos contaminated waste. A sufficient supply of cartridges shall be maintained on site at all times.

2.7 MEDICAL SURVEILLANCE:

A. The Contractor must provide medical surveillance to any employee or agent that may be exposed to asbestos in excess of background levels during any phase of the abatement project. The surveillance program shall be in accordance with 29 CFR 1926.1101(m) and (n).

2.8 VISITOR CLOTHING:

A. Authorized visitors shall be provided with suitable protective clothing, headgear, eye protection, and footwear as described herein, whenever they are required to enter the work area. Visitors must bring their own respirator with an affidavit stating that the visitor has passed both their physical exam, use of respirator and has been provided with a qualitative/quantitative fit test.

PART 3 - EXECUTION

3.1 GENERAL:

A. Secure entire work area to prevent entry of unprotected / unauthorized persons.

B. Cover, isolate, and seal work area walls and floors completely; including fixed equipment, doors, windows, skylights, lighting fixtures, duct openings, and all other openings into work area. Use polyethylene sheeting and seal edges with polyethylene adhesive tape.

C. Build triple barriers of plastic sheeting at all entrances and exits to the work area (airlock) so that the area is always closed off by one barrier when workers enter or exit.

D. Establish emergency and fire exits from the work area as part of the written emergency action plan.

E. Locate at the project site the log sheet sign-in for all persons entering work area from the beginning to the completion of the final clearance of the abatement project.

3.2 PREPARATION - WORK AREAS:

A. The work areas shall be completely isolated from other parts of the building so as to prevent asbestos-containing dust or debris from migrating beyond the isolated area. Should the area beyond the work area become contaminated with asbestos-containing dust or debris as a consequence of the work, the Contractor shall immediately notify the Owner and shall be responsible for cleaning, on a daily basis, those areas in accordance with the procedures indicated in paragraphs below. All costs incurred in cleaning, or otherwise decontaminating, non-work areas and the contents there of shall be borne by the Contractor including, but not limited to air monitoring, project monitoring, Owner labor, consulting service costs and fees. These areas shall be vacated and remain isolated until satisfactory clearance air monitoring results have been achieved.

B. Signs: Asbestos warning signs, required as per current OSHA regulations, shall be posted to restrict access to the regulated abatement work area at all locations and approaches to a location where airborne concentrations of asbestos may exceed ambient background levels. During Phase II A-D activities, signs shall be posted at locations such that persons may take the necessary protective measures to avoid potential exposure.

C. Utilities: The Contractor will be responsible to provide utilities to the work area. Connection to existing building utilities and services will require written approval of the Owner. All internal building utility connections will be in compliance with NEC, state and local building codes.

D. Electric Power: The Contractor shall shut down and lock out electric power to all work areas and shall provide temporary power and lighting, and ensure safe installation of temporary power sources and equipment used where high humidity and/or water shall be sprayed in accordance with all applicable codes. All power to work areas shall be brought in through a ground-fault interrupter at the source.

E. Movable Objects: Movable objects within the regulated work area shall be pre-cleaned using HEPA filtered vacuum equipment and/or wet cleaning and such objects shall be removed from the work area to an uncontaminated location. If disposed of as asbestos waste material, cleaning is not required. The Owner shall determine which method is to be utilized.

F. Fixed Objects: Fixed objects and other items which are to remain within the regulated work area, shall be pre-cleaned using HEPA filtered vacuum equipment and/or wet cleaning. Such objects and items shall be enclosed with two layers of six mil fire retardant polyethylene (minimum) and sealed with tape.

G. Pre-cleaning: The work area shall be cleaned using HEPA filtered vacuum equipment and/or wet cleaning. Methods that raise dust, such as dry sweeping or vacuuming without being equipped with HEPA filters, are prohibited. Asbestos material shall not be disturbed during pre-cleaning.

H. Isolation Barriers - General: Isolation barriers that seal off all openings, including but not limited to windows, doorways, skylights, ducts, grilles, diffusers, and any other penetrations of the area shall be constructed using two layers of a minimum of six mil fire retardant polyethylene sealed with tape. Also, all seams in the system components that pass through the work shall be sealed. Doorways which shall not be used for passage during work shall also be sealed.

I. Isolation Barriers (Hard walls) - Specific: Separate the work area from the remainder of the work site by construction of isolation barriers. Walls shall be constructed of wood or metal framing to support barriers in all openings larger than thirty-two square feet, except where any one dimension is one foot or less.

1. Sheathing Thickness: A sheathing material of at least 3/8 inch thickness shall be applied to the work side of the barrier.
2. Sealing of Partitions: Edges of the partition shall be caulked at the floor, ceiling, walls and fixtures to form an airtight seal.
3. Plastic Sheeting: The work area side of the partition shall be covered with a double layer of a minimum of six mil fire retardant polyethylene with staggered joints and sealed.

J. Plasticizing/Sealing: All floor, wall and ceiling surfaces shall be covered with a minimum of six mil fire retardant polyethylene. The floor shall be plasticized first and its polyethylene shall extend up the walls a distance of at least twelve inches on all sides. The walls shall then be plasticized by applying fire retardant polyethylene from ceiling to floor, thus overlapping the floor sheeting by at least twelve inches. This process shall be repeated for the second layer of polyethylene for the floor and walls. All seams within a layer shall be separated by a distance of at least six feet and sealed airtight. All seams between layers shall be staggered.

K. Removal of Mounted Objects: After isolation barriers are in place, objects such as light fixtures, ventilation equipment and other items not previously sealed, shall be removed, wet cleaned and HEPA vacuumed. Localized HEPA filtered vacuum equipment shall be used during fixture removal to reduce asbestos disposal.

L. Exits: Emergency and fire exits from the work area shall be maintained or alternate exits shall be established according to all applicable codes.

M. Toilet Facilities: Adequate toilet facilities shall exist either in the clean area of the personal decontamination enclosure or shall be readily accessible to the personal decontamination enclosure.

N. Enclosure Projects: Prior to the placement of isolation barriers, surfaces to be enclosed shall be cleaned using HEPA filtered vacuum equipment and/or wet cleaning.

O. Visual Barrier: Where work area is immediately adjacent and within view of occupied areas, a visual barrier of opaque polyethylene sheeting, at least of six mil thickness, shall be provided so that work procedures are not visible to building occupants. Where area adjacent to work area is accessible to public, construct a solid barrier on public side of sheeting to protect sheeting. Barriers shall be constructed with wood or metal

studs covered with minimum 3/8" thick sheathing. Where a solid barrier is provided, sheeting need not be opaque.

P. 12 NYCRR Part 56 and/or project site specific variance detail alternate isolation methods when applicable.

3.3 NEGATIVE AIR PRESSURE SYSTEM - WORK AREAS:

A. Provide a negative pressure system for the abatement project work areas at four air changes per hour unless otherwise specified by variance requirements.

B. Quality Assurance

1. Prior to the start of work, submit a design for the negative air system. Do not begin work until written approval of the system by the Owner is obtained. Include at least the following:

a. The number of machines required plus a spare unit.
b. Manufacturers project data on the machines to be used.
c. Location of the machines in the work space.
d. Description of the methods used to test air flow and pressure differential.

2. The system shall maintain a negative pressure of- 0.02 inch of water gauge between the abatement area and the space surrounding the abatement area.

3.4 WORKER DECONTAMINATION SYSTEM:

A. Provide a minimum of three totally enclosed chambers, lined with minimum of two layers of six mil thick fire retardant polyethylene sheeting. The floors shall be lined with reinforced six mil polyethylene sheeting.

B. Provide an equipment area for storage of equipment (tools, boots, etc.) to be reused in the abatement work and for removal of disposable clothing. Equipment area shall have two curtained airlocks, one leading to work area and one leading to shower area. A minimum of 6' shall be maintained between airlocks.

C. Provide a shower area containing at least one shower for every six employees with hot and cold water supply controllable at the tap and with waste drainage piped through filters that meet applicable federal, state and local rules, laws and regulations. Contractor is responsible for providing hot water to employees

D. Provide a changing area with suitable lockers, or other storage acceptable to the Owner, for storage of each worker's, or authorized visitor's street clothing, towels, clean disposable clothing for use in work area, and other non-contaminated items. Provide a curtained airlock, from the changing area leading to the shower area.

3.5 EQUIPMENT DECONTAMINATION SYSTEM:

A. Provide a minimum of two totally enclosed chambers, lined with minimum of two layers of six mil fire retardant polyethylene sheeting.

B. Provide an equipment washroom for cleaning and decontamination of equipment and containers to be removed from work area. Washroom shall have two airlock doorways, one leading to work area and one leading to holding area. Provide minimum of 6' between airlocks.

C. Provide a holding area for temporary storage of decontaminated equipment and containers. Holding area shall have two airlock doorways, one leading to equipment washroom and one leading to a lockable door to the outside.

3.6 PERSONNEL PROTECTION PROCEDURES:

A. Each worker shall be instructed and trained in the hazards of asbestos exposure and in proper use of respirators.

B. Each worker and authorized visitor shall always wear a respirator, properly fitted on the face, while in the work area until the whole area is completely decontaminated as evidenced by satisfactory final air clearance monitoring results.

C. In order to enter the work area, each worker or authorized visitor, without exception, shall:

D. Demonstrate their certification to enter the abatement work area and sign the entrance log.

E. Remove street clothes in changing area and put on new disposable coveralls, new head covers, new footwear covers, and a clean respirator with fresh filters each time the work area is to be entered. Perform positive and negative field fit test.

F. If non-disposable footwear is to be used, personnel shall proceed to the equipment area and put on non-disposable footwear therein.

G. Upon leaving the work area, each worker and/or authorized visitor, without exception, shall:

1. Remove gross contamination in work area by HEPA vacuum before entering equipment area and utilize a walk-off pan filled with water for cleaning footwear. Once inside equipment area, remove disposable coveralls, disposable head covers, and disposable footwear covers or non-disposable footwear before leaving equipment area.
2. Still wearing respirator, proceed to showers. Showering is mandatory. Care must be taken to follow reasonable procedures in removing respirator and filters to avoid breathing asbestos fibers while showering. The following procedures are required:
3. Thoroughly wet body from neck down.
4. Wet hair as thoroughly as possible without wetting respirator filter.
5. Take a deep breath, hold it and/or exhale slowly, complete wetting of hair, thoroughly wetting face, respirator and filter. While still holding breath, remove respirator and hold it away from face before starting to breathe.
6. Dispose of wet filter in container provided in shower.
7. Shower completely with soap and water.
8. Rinse thoroughly.

H. Shower each time before entering changing area to change into street clothes or into new disposable work items.

I. NOTE: Seriously injured persons may be removed from the work area without following the above decontamination procedure. Follow posted instructions.

J. Workers shall not eat, drink, smoke, chew gum or tobacco in the work area. To eat, drink or smoke, workers shall follow procedure described above, and then dress in street clothes before entering non-work areas of building.

K. Disposable coveralls, head covers, and footwear covers shall be provided to the Owner, air monitoring technician and others as authorized representatives of the project manager or Owner who may inspect the job site; approximately four complete outfits per day.

L. Personal Air Monitoring: Contractor will be responsible for personal air monitoring of workers, and providing results to the Owner within 24 hours for necessary actions that may be required.

3.7 EQUIPMENT REMOVAL PROCEDURES:

A. All equipment and containers in the work area shall remain in the work area until daily completion of asbestos removal activities. When daily abatement work is completed, equipment and containers shall be removed as follows:

B. While still in work area, clean all external surfaces of equipment and containers by wet cleaning or HEPA vacuum.

C. After gross decontamination in work areas, move equipment and containers into airlock, then into equipment room for complete decontamination. Workers shall not cross airlock.

D. When decontamination in equipment wash room is complete, move cleaned equipment and containers into airlock, then into holding area. Do not exit the holding area to uncontaminated areas directly; return to work area and exit through worker decontamination system.

E. Periodically, workers dressed in clean disposable coveralls shall enter the holding area from uncontaminated areas to remove clean equipment and containers. Do not enter equipment wash room when removing equipment and containers.

3.8 ASBESTOS REMOVAL (GENERAL):

A. Apply a fine spray of amended water to the asbestos before removal. Saturate the asbestos sufficiently to prevent emission of airborne fibers in excess of the exposure limits prescribed of OSHA standards.

B. Remove the asbestos in small sections. Perform the work with two-person teams. Use staging platforms if necessary.

C. Sharp-edged components shall be removed from the work area and sealed airtight in fiber drums prior to disposal in dumpsters. Dispose in accordance with USEPA and NYSDEC requirements.

D. While the removed asbestos is still moist, place it into plastic bags (six mil minimum thickness).

E. Frequency for Containerizing. Cleanup of accumulations of loose asbestos material shall be performed whenever enough loose asbestos material has been removed to fill a single leak-tight container of the type commensurate with the material properties. In no case shall cleanup be performed less than once prior to the close of each working day. Asbestos material shall be kept wet until cleaned up.

F. Frequency for Cleaning of Dust. Accumulations of dust shall be cleaned off all surfaces on a daily basis using HEPA vacuum and/or wet cleaning methods.

G. Frequency for Cleaning of Enclosures. Decontamination enclosures shall be HEPA vacuumed and/or wet cleaned at the end of each shift.

H. Cleanup Tools and Equipment. Accumulations of asbestos waste material shall be containerized utilizing HEPA vacuums or rubber or plastic dustpans, squeegees or shovels. Metal shovels shall not be used to pick up or move waste.

I. Remove sealed bags to loadout area, wipe the bags off and place in second disposal bag. Seal outer bag, wet wipe exterior of second bag before loading.

J. Decontamination enclosures shall be HEPA vacuumed and/or wet cleaned at the end of each shift.

3.9 ACM PACKAGING:

A. Asbestos-containing materials which are stripped away, or otherwise removed, shall be packed while still wet, into six mil plastic bags. The bags shall be sealed, prepared and placed in the container for transport. The outside of all bags shall be cleaned before leaving work area. Periodic clean up and bagging of removed materials, while still wet, and used coveralls, head-cover, etc., shall be done to prevent accumulation of such material on the floor covering Contractor shall limit traffic in the area which may cause excessive airborne concentrations of the fibers. Stripped material shall be sprayed as necessary to keep it wet until clean-up.

B. Bags shall be in accordance with all applicable rules, laws and regulations.

C. Bags, drums, or other containers shall be removed from the work area in accordance with Section 3.9 "Equipment Removal Procedures".

3.10 FINAL ABATEMENT CLEAN-UP:

A. Remove visible accumulations of materials and debris. Wet clean all surfaces within the work area and within worker/equipment decontamination enclosure system. Sealed drums, bags, and all equipment used in the work area shall be included in the clean up and shall be removed from work areas, via the equipment decontamination enclosure system, at an appropriate time in the cleaning sequence.

B. First Cleaning. All surfaces in the work area shall be first wet cleaned using rags, mops and sponges. To pick up excess liquid and wet debris, a wet-purpose HEPA vacuum may be used and shall be decontaminated prior to removal from the work area. Remove the top layer of polyethylene sheeting from the floor and wall, dispose of as asbestos contaminated waste. The first layer shall be left in place. The windows, doors, and HVAC vents shall remain sealed and the HEPA-filtered negative air pressure systems, air filtration, and decontamination enclosure systems shall remain in service.

C. Second cleaning and sheeting removal. After the first cleaning, at least twelve hours shall be allowed for asbestos to settle. Thereafter, all objects and surfaces in the work area shall be HEPA vacuumed and/or wet cleaned. The remaining plastic, on walls and floors only, shall then be removed. All windows, doors, HVAC system vents and all other openings shall remain sealed.

D. Third cleaning. After the second cleaning, at least 12 hours shall elapse before HEPA-vacuuming and/or wet-cleaning all surfaces in the work area. The negative pressure ventilation units shall remain in continuous operation during the settling periods and the third cleaning.

E. Contractor shall clean all surfaces with wet wiping and HEPA-filtered vacuum equipment; this will include the cleaning of Contractors equipment. After cleaning the work area, wait 12 hours to allow settlement of dust, and again wet clean or clean with HEPA-filtered vacuum equipment all surfaces in the work area. After completion of the second cleaning operation, Contractor will perform another complete visual inspection of the work area to ensure that the work area is free of visible debris. Negative pressure ventilation units shall remain in continuous operation during the settling periods and the third cleaning.

F. Specific relief from multiple cleaning sequences may be found in 12NYCRR Part 56.

G. Prior to the collection of clearance samples, a final visual inspection shall be performed by the Project Monitor of Owner's air sampling firm under conditions of adequate lighting which shall be provided by the contractor. The work area shall be free of visible debris.

H. When aggressive air sampling demonstrates compliance with the clearance criteria, the worker/equipment decontamination enclosure system, and all window, door, and HVAC vent seals and plastic shall be removed. The area shall be thoroughly wet cleaned, and HEPA vacuumed. A final check shall be carried out to ensure that no dust or debris remains on surfaces as a result of dismantling operations.

I. Repeat the cleaning process as described if either the visual inspection criterion or air monitoring clearance level is not satisfactory.

J. The PCM air samples, taken utilizing an aggressive sampling technique must show airborne concentrations of total fibers below 0.01 fibers per cubic centimeter (f/cc) or the background level, whichever is greater. Sample results for TEM (if requested) must show less than (<) an average of 70 structures per square millimeter, clearance threshold for TEM methodology.

3.11 QUALITY ASSURANCE:

A. Background Airborne Fiber Counts (Phase 1 B)

1. The Owner shall obtain the services of a third party air sampling firm asbestos contractor to monitor the background fiber counts or those prevalent in the area before work begins following 12NYCRR Part 56 and obtain counts using the NIOSH 7400 laboratory analysis procedure.

B. Work Area Preparation (Phase II A)

1. The Owner shall obtain the services of a third party air sampling firm asbestos contractor to conduct work area preparation air sampling following 12 NYCRR Part 56.

C. Asbestos Handling Airborne Fiber Counts (Phase II B)

1. The Owner shall obtain the services of a third party air sampling firm asbestos contractor to monitor airborne fiber counts outside of the work area during the progress of abatement as per 12 NYCRR Part 56.

D. Work Area Clearance (Phase II C)

1. The air monitoring firm shall conduct clearance air sampling at project completion per 12 NYCRR Part 56. Analysis per this section will be performed using Phase Contract Microscopy (PCM). Analysis by Transmission Electron Microscopy (TEM) as outlined in AHERA (40 CFR Part 763) may be performed by Owner's request, with clearance criteria will be in accordance with AHERA protocols.

E. Laboratories engaged in PCM analysis must be accredited for PCM analysis work by New York State Department of Health. The laboratory utilized for analyzing clearance TEM air samples shall be successful participants in the AIHA Proficiency Analytical Testing (PAT) Program for Asbestos Analysis or NVLAP.

F. The air sampling firm shall carry a valid and current Asbestos Handling license under the requirements of 12 NYCRR Part 56.

3.12 RESPONSIBILITIES AND DUTIES OF CONTRACTOR:

A. To facilitate testing services, the Contractor shall:

1. Advise the Owner and the testing agency sufficiently in advance of operations to allow for completion of tests and for the assignment of personnel.
2. Ensure the cooperation of the employees with the project monitor and air sampling technician.

B. The Contractor shall hold harmless the Building Owner, Owner's agents and Air Monitoring firm for New York State Department of Labor, EPA and OSHA fines and fees resultant from activities of the Contractor. The Contractor shall be 100% responsible for all regulatory compliance. When other parties such as the Air Monitor, Owner and/or Construction Manager are fined, levied or otherwise caused monetary loss due to the Contractor's action and/or lack of action; said Contractor shall reimburse the entire loss to the affected party. The failure of the Owner, Air Monitor and/or Construction Manager to enforce the contractor's regulatory compliance shall in no way relieve the Contractor of responsibility for maintaining such regulatory compliance, or for the reimbursement of fines resulting from their non-compliance. The Contractor shall authorize that money may be withheld from the contract sum in sufficient quantity to reimburse the affected party.

3.13 ADDITIONAL TESTING:

A. The Contractor may conduct its own area air monitoring and laboratory testing. If it elects to do this, the cost shall be included in the contract price(s).

B. If it is necessary to re-sample work areas for clearance testing because the area does not meet the clearance standards, the abatement contractor shall incur all costs for this additional labor, sampling and laboratory analysis.

3.14 DISPOSAL OF ASBESTOS MATERIAL AND RELATED DEBRIS (GENERAL):

A. Properly containerized waste must be transported by a licensed hauler and shipped to an approved landfill. Waste manifests must show chain of custody. Provide one copy of the waste manifests to the Owner.

B. All contaminated waste shall be carefully loaded on trucks or other appropriate vehicles for transport. Before and during transport, care shall be exercised to insure that no unauthorized persons have access to the material.

C. Transporters of the waste are prohibited from back hauling any freight after the disposition of the Owner's waste stream until decontamination of the vehicle and/or trailer is assured.

3.15 WASTE MANAGEMENT AND DISPOSAL (SPECIFIC):

A. The Contractor shall be responsible for all packaging, labeling, transport, disposal and record-keeping associated with asbestos containing waste in accordance with all federal, state and local regulations.

B. The Contractor shall be responsible to remove all non ACM debris, rubbish and other materials to be disposed of as non ACM waste resulting from operations provided on the job site and dispose of it in accordance will all state and local regulations.

C. All asbestos containing materials will be sufficiently wet to prevent any visible emission of dust into the air. The Contractor shall examine the asbestos containing waste material at a minimum every 24 hour period to assure that containers and packaging have not been damaged. If packaging has been damaged, materials will be wetted and repackaged.

D. Asbestos containing waste materials, properly packaged, will be stored in the locked transport vehicle prior to shipping. The transport vehicle will be lined with polyethylene.

E. The Contractor shall ensure and show proof in the submittal package that the person transporting the waste holds a valid permit issued in accordance with appropriate federal, state, and local regulations.

F. The Contractor and/or building owner shall provide to the transporter at the time of transfer appropriate waste shipment record as required by the federal, state and local regulations with a copy to the project engineer.

G. Contractor shall maintain proper follow up procedures to assure that waste materials have been received by the designated waste site in a timely manner and in accordance with all federal, state and local regulations.

H. The Contractor shall assure that disposal of ACM is at a landfill approved to accept asbestos containing waste and shall provide to the Owner, a waste shipment form signed by the landfill's owner within 35 days.

END OF SECTION 028213

SECTION 028319 - REMOVAL OF LEAD CONTAINING MATERIAL

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This specification covers the removal and disposal of lead or lead-containing materials during selective demolition from the University at Buffalo's North Campus, Furnas Hall.

1.2 SCOPE OF WORK

A. All work under this contract shall be performed in strict conformance with applicable federal, state and local rules, laws and regulations including but not limited to:

1. New York State Department of Environmental Conservation (DEC) 6NYCRR:
2. Part 360 Solid Waste Management Facilities.
3. Part 364 Waste Transporter Permits.
4. Part 370 Hazardous Waste Management System-General.
5. Part 371 Identification and Listing of Hazardous Wastes.
6. Part 372 Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities.
7. Part 373 Hazardous Waste Management Facilities.

B. New York State Department of Transportation (DOT): Follow all regulations of 49CFR Part 100 through 199.

C. Occupational Safety and Health Administration (OSHA): Lead Exposure in Construction: Interim Final Rule 29 CFR 1926.62.

1.3 DEFINITIONS

A. Action Level: Employee exposure, without regard to use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air averaged over an 8 hour period in an occupational/industrial environment.

B. Area Sampling: Sampling of lead concentrations within the lead control area and inside the physical boundaries, which is representative of the airborne lead concentrations but is not collected in the breathing zone of personnel. This sampling will be conducted by owner's third party consultant, if required.

C. Contaminated Room: Room for removal of contaminated personal protective equipment (PPE).

D. Decontamination Shower Facility: That facility that encompasses a clean clothing storage room, and a contaminated clothing storage and disposal rooms, with a shower facility in between.

E. Eight-Hour Time Weighted Average (TWA): Airborne concentration of lead to which an employee is exposed, averaged over an 8 hour workday as indicated in 29 CFR 1926.62.

F. High Efficiency Particulate Air (HEPA) Filter Equipment: HEPA filtered vacuuming equipment with a UL 586 filter system capable of collecting and retaining lead-contaminated paint dust. A high efficiency particulate filter means 99.97 percent efficient against 0.3 micron or larger size particles.

G. Lead: Metallic lead, inorganic lead compounds, and organic lead soaps.

H. Lead-Based Paint (LBP): Paint or other surface coating that contains lead in excess of 1.0 milligrams per centimeter squared or 0.5 percent by weight.

I. Lead Control Area: An enclosed area or structure, constructed as a temporary containment equipped with HEPA filtered local exhaust, which prevents the spread of lead dust, paint chips, or debris existing as a condition of lead removal operations. The lead control area is also isolated by physical boundaries to prevent unauthorized entry of personnel.

J. Lead Permissible Exposure Limit (PEL): Fifty micrograms per cubic meter of air as an 8 hour time weighted average as determined by 29 CFR 1926.62. If an employee is exposed for more than eight hours in a workday, the PEL shall be determined by the following formula: PEL (micrograms/cubic meter of air) = 400/No. Hours worked per day.

K. Personal Sampling: Sampling of airborne lead concentrations within the breathing zone of an employee to determine the 8 hour time weighted average concentration in accordance with 29 CFR 1926.62. Samples shall be representative of the employees' work tasks. The sampling, conducted by the Contractor, shall provide information to complete the required exposure assessment to identify the level of exposure a worker would be subject to without respiratory protection. Whenever there has been a change of equipment, process, control, personnel or a new task has been initiated, the Contractor shall conduct additional personal sampling.

L. Physical Boundary: Area physically roped or partitioned off around an enclosed lead control area to limit unauthorized entry of personnel. As used in this section, "inside boundary" shall mean the same as "outside lead control area but inside boundary."

M. Project Supervisor (PS): As used in this section, refers to a person employed by the Contractor who is trained and certified in the recognition and control of lead hazards in accordance with 29 CFR 1926.62. The PS shall be trained and certified to inspect, assess or remove lead based paint, dust or soil.

N. Third Party Consultant: Owner will provide a third party consultant to provide pre-work assessments, project monitoring assessments for the work area and surrounding areas and final clearance assessments.

O. Worker certifications: All workers inspecting, assessing, or removing lead-based paint, dust or soil who are trained and certified to conduct these activities as per 29 CFR 1926.62.

1.4 QUALIFICATIONS:

A. Project Supervisor (PS): Submit name, address, telephone number and submit proper documentation that the PS is trained and certified in accordance with 29 CFR 1926.62.

B. Testing Laboratory: Submit the name, address, and telephone number of the testing laboratory selected to perform the air sampling and disposal testing. The air sampling results shall be utilized for reporting of airborne concentrations of lead for Contractor worker protection issues. Use a laboratory accredited under the EPA National Lead Laboratory Accreditation Program (NLLAP) by either the American Association for Laboratory Accreditation (A2LA) or the American Industrial Hygiene Association (AIHA) and that is successfully participating in the Environmental Lead Proficiency Analytical Testing (ELPAT) program to perform sample analysis.

C. Occupational And Environmental Sampling Results: Submit occupational and environmental sampling results to the owner within three working days of collection, signed by the testing laboratory responsible official, the employee that performed the sampling, and the PS.

1. The sampling results shall represent each job classification, or if working conditions are similar to previous jobs by the same employer, provide previously collected exposure data that can be used to estimate worker exposures in accordance with 29 CFR 1926.62. The data shall represent the worker's regular daily exposure to lead.
2. Submit worker exposure data conducted during the task based trigger operations of 29 CFR 1926.62.
3. The initial monitoring shall determine the requirements for further monitoring and the need to fully implement the control and protective requirements including the compliance program Lead removal plan in accordance with 29 CFR 1926.62.

D. Occupational And Environmental Assessment Data Report:

1. Some lead removal work may not require full implementation of the requirements of 29 CFR 1926.62. Based on the experience of the Contractor and/or the use of a specific process or method for performing the work, the Contractor may be able to provide historic data (previous 12 months) to demonstrate that airborne exposures are controlled below the action level. Such methods or controls shall be fully presented in the lead removal plan. To reduce the full implementation of 29 CFR 1926.62, the Contractor shall provide documentation in an Assessment Data Report.
2. Submit occupational and environmental assessment report to owner prior to start of work, signed by the testing laboratory responsible official, and the PS.

a. Submit a report that supports the determination regarding the reduction of the need to fully implement the requirements of 29 CFR 1926.62 and supporting the lead removal. The exposure assessment shall represent

each job classification, or if working conditions are similar to previous jobs by the same employer, provide previously collected exposure data that can be used to estimate worker exposures in accordance with 29 CFR 1926.62. The data shall represent the worker's regular daily exposure to lead for stated work.

b. Submit worker exposure data conducted during the task based trigger operations of 29 CFR 1926.62 with a complete process description in supporting a negative assessment.

c. The initial assessment shall determine the requirement for further monitoring and the need to fully implement the control and protective requirements including the compliance program lead removal plan in accordance with 29 CFR 1926.62.

1.5 QUALITY ASSURANCE

A. Medical Examinations: Initial medical surveillance as required by 29 CFR 1926.62 shall be made available to all employees exposed to lead at any time (1 day) above the action level. Full medical surveillance shall be made available to all employees on an annual basis who are or may be exposed to lead in excess of the action level for more than 30 days a year or as required by 29 CFR 1926.62. Adequate records shall show that employees meet the medical surveillance requirements of 29 CFR 1926.33, 29 CFR 1926.62, and 29 CFR 1926.103.

1. Medical Records: Maintain complete and accurate medical records of employees for a period of at least 30 years or for the duration of employment plus 30 years, whichever is longer.
2. Medical Surveillance: Provide medical surveillance to all personnel exposed to lead as indicated in 29 CFR 1926.62.

B. Project Supervisor (PS) Responsibilities

1. Certify training as meeting all federal, State, and local requirements.
2. Review and approve lead removal plan for conformance to the applicable referenced standards.
3. Continuously inspect lead-based material removal work for conformance with the approved plan.
4. Perform air sampling, if required by Contractor.
5. Ensure work is performed in strict accordance with specifications at all times.
6. Control work to prevent hazardous exposure to human beings and to the environment at all times.
7. Certify the conditions of the work as called for elsewhere in this specification.

C. Training: Train each employee performing inspection, assessing, removal, disposal, and air sampling operations prior to the time of initial job assignment and annually thereafter, in accordance with 29 CFR 1926.21, 29 CFR 1926.62, and State and local regulations.

1. Training Certification: Submit a certificate for each employee, signed and dated by the approved training source, stating that the employee has received the required lead training.

D. 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 annually thereafter as required by 29 CFR 1926.62.
2. Establish and implement a respiratory protection program as required by ANSI Z88.2, 29 CFR 1926.103, 29 CFR 1926.62, and 29 CFR 1926.55.

E. Hazard Communication Program: Establish and implement a Hazard Communication Program as required by 29 CFR 1926.59.

F. Hazardous Waste Management: The Hazardous Waste Management Plan shall comply with applicable requirements of federal, State, and local hazardous waste regulations and address:

1. Identification and classification of hazardous wastes associated with the work.
2. Estimated quantities of wastes to be generated and disposed of.
3. Names and qualifications of each Contractor that will be transporting, storing, treating and/or disposing of the wastes. Include the facility location and operator and a 24-hour point of contact. Furnish two copies of EPA, or State and local hazardous waste permit applications or permits or manifests, as required, and co-ordinate with owner regarding the use of an existing EPA Identification number or developing separate EPA Identification numbers.
4. Names, qualifications and training (experience and training) of personnel who will be working on-site with hazardous wastes.
5. List of waste handling equipment to be used in performing the work, to include cleaning, volume reduction, and transport equipment.
6. Spill prevention, containment, and cleanup contingency measures including a health and safety plan to be implemented in accordance with 29 CFR 1926.65.
7. Work plan and schedule for waste containment, removal and disposal. Wastes shall be cleaned up and containerized daily.
8. Unit cost for hazardous waste disposal according to this plan.

G. Environmental, Safety and Health Compliance: In addition to the detailed requirements of this specification, comply with laws, ordinances, rules, and regulations of Federal, State, and local authorities regarding removing, handling, storing, transporting, and disposing of lead waste materials. Submit matters regarding interpretation of standards to owner for resolution before starting work. Where specification requirements and the referenced documents vary, the most stringent requirement shall apply.

H. Pre-Construction Conference: Along with the PS, meet with owner and any facility or consultant representatives to discuss in detail the hazardous waste management plan and the lead removal plan, including work procedures and precautions for the removal plan.

1.6 EQUIPMENT

A. Respirators: Furnish appropriate respirators approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services,

for use in atmospheres containing lead dust. Respirators shall comply with the requirements of 29 CFR 1926.62.

B. Special Protective Clothing: Furnish personnel who will be exposed to lead-contaminated dust with proper disposable uncontaminated, reusable protective whole body clothing, head covering, gloves, and foot coverings as required by 29 CFR 1926.62. Furnish proper disposable plastic or rubber gloves to protect hands. Reduce the level of protection only after obtaining approval from the PS.

C. Vacuum Filters: UL 586 labeled HEPA filters.

D. Equipment for Owner's Personnel: Furnish owner with two complete sets of personal protective equipment (PPE) daily, as required herein, for entry into and inspection of the removal work within the lead controlled area. Personal protective equipment shall include disposable whole body covering, including appropriate foot, head, and hand protection. PPE shall remain the property of the Contractor. The Owner will provide respiratory protection for owner and their representatives.

1.7 REMOVAL

A. Title to Materials: Materials resulting from demolition work, except as specified otherwise, shall become the property of the Contractor and shall be disposed of in accordance with all federal, State and local regulations.

1.8 EXECUTION

A. Protection

1. Lead Control Area Requirements

a. Lead will be removed by means which will not likely create airborne, lead-containing dust (such as careful wet scraping or chemical stripping), establish a lead control area by situating critical barriers and physical boundaries around the area or structure where lead removal operations will be performed.
b. Protection of Existing Work to Remain: Perform removal work without damage or contamination of adjacent areas. Where existing work is damaged or contaminated, restore work to its original condition or better.
c. Boundary Requirements: Provide physical boundaries around the lead control area by roping off the area designated in the work plan or providing curtains, portable partitions or other enclosures to ensure that airborne concentrations of lead will not reach 30 micrograms per cubic meter of air outside of the lead control area.
d. Physical Boundary: Provide physical boundaries around the lead control area by roping off the area designated in the work plan or providing curtains, portable partitions or other enclosures to ensure that airborne concentrations of lead will not reach 30 micrograms per cubic meter of air outside of the lead control area.
e. Warning Signs: Provide warning signs at approaches to lead control areas. Locate signs at such a distance that personnel may read the sign and take

the necessary precautions before entering the area. Signs shall comply with the requirements of 29 CFR 1926.62.

2. Heating, Ventilating and Air Conditioning (HVAC) Systems: Shut down, lock out, and isolate HVAC systems that supply, exhaust, or pass through the lead control areas. Seal intake and exhaust vents in the lead control area with 6 mil plastic sheet and tape. Seal seams in HVAC components that pass through the lead control area. Provide temporary HVAC system for areas in which HVAC has been shut down outside the lead control area.
3. Decontamination Shower Facility: Provide clean and contaminated change rooms and shower facilities in accordance with this specification and 29 CFR 1926.62.
4. Eye Wash Station: Where eyes may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes shall be provided within the work area.
5. Mechanical Ventilation System

    a. Use adequate ventilation to control personnel exposure to lead in accordance with 29 CFR 1926.62.
    b. To the extent feasible, use fixed local exhaust ventilation connected to HEPA filters or other collection systems, approved by the PS. Local exhaust ventilation systems shall be designed, constructed, installed, and maintained in accordance with ANSI Z9.2.
    c. Vent local exhaust outside the building only and away from building ventilation intakes.
    d. Use locally exhausted, power actuated, removal tools.

6. Personnel Protection: Personnel shall wear and use protective clothing and equipment as specified herein. Eating, smoking, or drinking or application of cosmetics is not permitted in the lead control area. No one will be permitted in the lead control area unless they have been appropriately trained and provided with protective equipment.

B. Work Procedures: Perform removal and disposal of lead-containing material in accordance with approved /lead-containing removal plan. Use procedures and equipment required to limit occupational and environmental exposure to lead during removal in accordance with 29 CFR 1926.62, except as specified herein.

1. Personnel Exiting Procedures: Whenever personnel exit the lead-controlled area, they shall perform the following procedures and shall not leave the work place wearing any clothing or equipment worn during the work day:

    a. Vacuum themselves off.
    b. Remove protective clothing in the contaminated change room, and place them in an approved impermeable disposal bag.
    c. Shower or Wash hands and face at the site, as directed, don appropriate disposable or uncontaminated reusable clothing; move to an appropriate facility; shower.
    d. Change to clean clothes prior to leaving the physical boundary designated around the lead control area.

2. Sampling

a. Air sample for lead in accordance with 29 CFR 1926.62 and as specified herein. Air sampling shall be directed or performed by the PS.

i. The PS shall be on the job site directing the air sampling and inspecting the lead removal work to ensure that the requirements of the contract have been satisfied during the entire lead removal operation.
ii. Collect personal air samples on employees who are anticipated to have the greatest risk of exposure as determined by the PS. In addition, collect air samples on at least 25 percent of the work crew or a minimum of two employees; whichever is greater, during each work shift.
iii. Submit results of air samples, signed by the PS, within 24 hours after the air samples are taken. Notify owner immediately of exposure to lead at or in excess of the action level of 30 micrograms per cubic meter of air outside of the lead control area.

C. Cleanup and Disposal

1. Cleanup: Maintain surfaces of the lead control area free of accumulations of dust. Restrict the spread of dust and debris; keep waste from being distributed over the work area. Do not dry sweep or use compressed air to clean up the area. At the end of each shift and when the removal operation has been completed, clean the area of visible lead contamination by vacuuming with a HEPA filtered vacuum cleaner, wet mopping the area and wet wiping the area as indicated by the PS. Re-clean areas showing dust or residual chips or debris. After visible dust, chips and debris is removed, wet wipe and HEPA vacuum all surfaces in the work area. If adjacent areas become contaminated at any time during the work, clean, visually inspect, and then wipe sample all contaminated areas. The PS shall then certify in writing that the area has been cleaned of lead contamination before restarting work.
2. Clearance Certification

a. The Contractor shall document in writing and provide analytical documentation to certify that the employee exposure to an airborne concentration of lead were below the required action level, respiratory protection used for the employees was adequate; the work procedures were performed in accordance with 29 CFR 1926.62 and 40 CFR 745; and that there were no visible accumulations of material and dust containing lead left in the work site. Do not remove the lead control area or roped off boundary and warning signs prior to owner's acknowledgement of receipt of the Contractor certification.

3. Prior to disposal, the Director's Representative will employ the services of an independent testing lab to perform testing of the removed materials for toxicity in accordance with EPA Method 1311, Toxicity Characteristic Leaching Procedure (TCLP).

a. Test results indicating a value greater than 5 ppm lead or 5mg/L classifies the removed material as Hazardous Waste.

1.9 DISPOSAL

A. Pieces of solid manufactured lead and other metal components painted with lead-based paint or otherwise containing lead may be collected and recycled at an authorized facility.

B. Collect lead dust created by cutting utilizing a HEPA vacuum. Lead dust and lead-contaminated PPE and clothing, which may produce airborne concentrations of lead particles as a result of being exposed to cutting activities, shall be containerized for disposal. Label the containers in accordance with 29 CFR 1926.62 and 40 CFR 261. Dispose of lead-contaminated waste material at an EPA or State approved hazardous waste treatment, storage, or disposal facility off Owner's property.

C. Store waste materials in U.S. Department of Transportation (49 CFR 178) approved 55-gallon drums. Properly label each drum to identify the type of waste (49 CFR 172) and the date the drum was filled. The owner or an authorized representative will assign an area for interim storage of waste-containing drums. Do not store hazardous waste drums in interim storage longer than 90 calendar days from the date affixed to each drum.

D. Handle, store, transport, and dispose lead or lead-contaminated waste in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, and 40 CFR 265. The Contractor shall provide documentation the transporter is authorized to transport the waste, authorized to deliver the waste to the treatment, storage, or disposal facility and the treatment, storage, or disposal facility is authorized to accept the waste. Comply with land disposal restriction notification requirements as required by 40 CFR 268.

E. All material, whether hazardous or non-hazardous shall be disposed in accordance with laws and provisions and federal, State, or local regulations. Ensure waste is properly characterized. The result of each waste characterization (TCLP for RCRA materials) will dictate disposal requirements.

F. Disposal Documentation: Submit written evidence the hazardous waste treatment, storage, or disposal facility (TSD) is approved for lead disposal by the EPA and State or local regulatory agencies. Submit one copy of the completed manifest, signed and dated by the initial transporter in accordance with 40 CFR 262.

G. Payment for Hazardous Waste: Payment for disposal of hazardous waste will not be made until a signed copy of the manifest from the treatment or disposal facility certifying the amount of lead-containing materials delivered is returned and a copy is furnished to the Owner.

END OF SECTION 028319

SECTION 028600 – DISPOSAL OF HAZARDOUS MATERIAL

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. This specification covers the identification and disposal of hazardous waste, and related hazardous materials. Demolition and removal of materials shall be as required to support the work.

B. Special Wastes:

1. Asbestos-Containing Materials (ACM): ACM is regulated by United States Environmental Protection Agency (EPA) Toxic Substances Control Act (TSCA) Rules, NY Code Rule 56 and United State Occupational Safety and Health Administration (OSHA) standards and is not Hazardous Waste. Asbestos-Containing materials are governed under Specification 028213.

2. PCB Bulk Waste and non-liquid PCB materials (NLPCB): Interior and exterior caulk / sealant and glazing materials may contain NLPCB; if so, when disposed these materials are EPA-regulated PCB Bulk Waste under TSCA and are NYS hazardous waste. PCB light ballasts are also to be disposed of as NYS Hazardous Waste.

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. All Work shall be performed 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.

F. Working hours shall be as required and approved by the Owner. Removal activities including, but not limited to, work area preparation, gross removal activities, cleaning activities, waste removal, etc. may need to be performed during 'off-hours' (including nights and weekends). In addition, multiple mobilizations may be required to perform the work identified in this project. The Contractor shall coordinate and schedule all Work with the facility and Owner's representative.

1.2 DEFINITIONS

A. Hazardous waste shall be any materials to be disposed that possess at least one of four characteristics (ignitability, corrosivity, reactivity or toxicity) as defined and regulated by the Resource Conservation and Recovery Act (RCRA) and applicable state and federal

regulations, or a material specifically identified as hazardous waste by applicable Federal or State lists, in 40 CFR 261 or 6 NYCRR 371, respectively.

B. A Conditionally Exempt/Very Small Quantity Generator (CESQ/VSQG) of hazardous waste shall be a waste handler who generates no more than 100 kilograms per month of listed and/or characteristic hazardous waste, generates no more than 1 kilogram of acute hazardous waste in any calendar month, and stores no more than 1,000 kilograms of listed and/or characteristic hazardous waste or more than 1 kilogram of acutely hazardous waste.

C. A Small Quantity Generator (SQG) of hazardous waste shall be a waste handler who generates no more than 1,000 kilograms per month of listed and/or characteristic hazardous waste, generates no more than 1 kilogram of acute hazardous waste per month, and stores no more than 6,000 kilograms of listed and/or characteristic hazardous waste or more than 1 kilogram of acutely hazardous waste.

D. Large Quantity Generator (LQG) of hazardous waste shall be a waste handler who generates more than 1,000 kilograms per month of listed and/or characteristic hazardous waste, generates more than 1 kilogram of acute hazardous waste per month, or stores more than 6,000 kilograms of hazardous waste or 1 kilogram of acutely hazardous waste.

1.3 SUBMITTALS

A. Submittal requirements under specification sections 028600, 028700, and 029001 are to be merged into a single package with documents supporting both scopes of work.

B. Pre-Work Submittals: Within 7 days prior to the pre-construction conference, the Contractor shall submit an electronic copy of the documents listed below for review, comment and approval prior to the commencement of abatement/removal activities:

1. Training & Certifications

a. Certificate of on-site supervisor for completion of the OSHA 40-hour Health and Safety course for handling hazardous waste and spills, including most recent refresher training.
b. OSHA 8-hour supervisor training for hazardous waste.
c. List of the employees scheduled to perform this work and certificates of workers, for successful completion of the OSHA 40-Hour Health and Safety Course for Hazardous Waste and spills, including most recent refresher training.
d. Valid United States Department of Transportation (DOT) training for supervisor and all employees loading waste and maintaining on-site waste storage area. This training shall include: general awareness / familiarization training; function specific training; safety training; security awareness training; and in-depth security training.
e. Annual hazardous waste RCRA training sign-in sheets for all employees and supervisors working on the project. This training may be either 2 hours, 4 hours or 8 hours.

f. If applicable, Lead Paint certification for each of the employees and supervisors as per EPA.
g. Employees managing Hazardous Waste must also meet the Personnel training requirements in section 6 NYCRR 373-3.2. Provide proof of training for these employees.

2. Transportation & Disposal

a. Valid Hazardous Waste Transporter NYS Part 364 permit for all transporters.
b. Valid Hazardous Waste Transport vehicle permit for all transporters for each state the waste is being transported through to reach the Treatment, Storage and Disposal Facility (TSDF).
c. Valid DOT vehicle permit for Transporters.
d. Transfer Facility Permit (if used) including the name, address and EPA ID No. of the facility, contact person, and acknowledgement letter stating that the facility has the capacity and is permitted to accept the waste from the project site.
e. Final Disposal Facility permit including the name, address and EPA ID No. of the facility, contact person, and acknowledgement letter stating that the facility has the capacity and is permitted to accept the waste from the project site.
f. The TSDF permit(s) must identify the waste material(s) to be received.
g. Draft Land Disposal Restriction (LDR) form.
h. Draft Waste Profile.

3. Site-specific

a. If the Contractor introduces any chemical into the work environment, a SDS for each chemical must be presented to the Owner's Representative prior to use.
b. Progress Schedule:

1) Show the complete sequencing of removal activities and the sequencing of Work within each building, wing or section of building.
2) Show the dates for the beginning and completion of each major element of Work including substantial completion dates for each Work Area, building or phase.

c. Project Plan: Provide a description of the methods, procedures and materials to be used in performing the work and handling all hazardous wastes. Also provide a schedule identifying specific work areas and duration. The schedules will be utilized to schedule facility and third-party environmental consultant requirements.
d. Health and Safety Plan and Facility Contingency Plan revision information for material handling and emergency procedures.

1) Waste types being generated.
2) Waste storage details (drums, containers, or dumpsters, types, with cover?).

3) Waste containment details. How is the waste being stored? (indoors or outdoors, is it being contained to prevent impact to adjoining spaces or environment?).
4) Contractor emergency evacuation plan requirements and evacuation route for the project specific areas.
5) Duration of waste generation and contract.
6) Contractor and Project team emergency contact numbers.

e. Do not start work until submittals are returned with the Owner's Representative stamp indicating that the submittal is approved for unrestricted use.

B. On-Site & During Construction:

1. The following submittals, documentation, and postings shall be maintained on-site by the Contractor during abatement activities at a location approved by the Environmental Consultant:

a. Approved pre-work submittals.
b. Project Documents (specifications and drawings).
c. Applicable regulations.
d. Updated licenses/permits and acknowledgement letters for any changes in transporter or disposal site.
e. For each employee, current annual medical respiratory clearance.
f. For each employee, current satisfactory respiratory fit test results.
g. Contractor shall provide weekly update, including initial container storage dates for each container stored, an approximate estimate of amount of waste being generated during each work-day, week or month that it is stored on-site. The actual weight of the waste, excluding the weight of the dumpster, shall be identified.
h. Toxicity Characteristic Leaching Procedure (TCLP) waste sample results.
i. Completed Waste Profile form(s).
j. Completed LDR form.
k. List of emergency phone numbers.
l. Waste disposal log.
m. Daily Project Log.
n. Copy of Waste manifest for each load of waste that is removed from site.
o. Copy of completed hazardous waste manifest including legible transporter and disposal facility information, dates and times of waste shipment departures / arrivals, and signatures, for each load of waste, within 35 days of waste being removed from site.

C. Close-out:

1. Within 30 days after project completion, the Contractor shall submit one electronic copy of the closeout-out submittal (requirements listed below) for review and approval prior to the Contractor's final payment.

a. Fully Executed Copies of all completed hazardous waste disposal manifests, and disposal logs, including legible transporter and disposal facility

information, departure / arrival times and dates, and signatures. Original hazardous waste manifests shall be sent to the Owner or disposal facility state, as applicable.

b. Daily progress log.

c. Entry/Exit Logs. Decontamination unit entry/exit log for Hazardous Waste generation work areas (must be separate from any documentation associated with Asbestos removals, unless the material is both Hazardous and ACM).

d. If TSDF transfer facility is utilized, completed hazardous waste manifest from final destination must also be provided. Final destination of waste must be within the United States.

1.4 APPLICABLE STANDARDS AND REGULATIONS

A. All activities related to the work shall be conducted in compliance with all applicable laws, regulations, and requirements which may include, but not be limited to: EPA, DOT, RCRA, TSCA, OSHA, New York State Department of Environmental Conservation (NYS DEC), New York City Department of Environmental Protection (NYC DEP), and New York City Fire Department.

B. The Contractor is required to secure and maintain all required regulatory permits necessary to perform all aspects of the work.

C. The Contractor shall containerize and store waste in accordance with all applicable regulations. All containers are to be appropriately marked/labeled.

1.5 PROJECT SUPERVISOR

A. The Contractor shall designate a full-time Project Supervisor who shall meet the following qualifications:

1. The Project Supervisor shall be trained in hazardous waste removal/generation procedures and hazardous waste management in NYS, via a 40-hour HAZWOPER and 8-hour Supervisor training course, as well as appropriate RCRA and DOT training.
2. The Project Supervisor shall have a minimum of one year experience as a supervisor.
3. The Project Supervisor must be able to read and write English fluently, as well as communicate in the primary language of the Workers.

B. If the Project Supervisor is not on-site at any time whatsoever, all Work shall be stopped. The Project Supervisor shall remain on-site until the Project is complete.

C. The Project Supervisor shall maintain a bound Daily Project Log that includes the Waste Disposal Log required by section 4.03 of this specification.

D. 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 Contractor primary point of contact for the Environmental Consultant.

E. As required by applicable regulations, prior to assignment to hazardous waste work, instruct each employee with regard to the hazards of the generated waste, safety and health precautions, and the use and requirements of protective clothing and equipment, as well as the facility contingency plan and/or Contractor emergency action plan.

PART 2 - PRODUCTS

2.1 PROTECTIVE CLOTHING

A. Provide personnel utilized during the Project with disposable protective whole body clothing, head coverings, and foot coverings. Provide appropriate disposable gloves (i.e. neoprene or butyl gloves for handling PCBs), suitable to prevent hazardous waste skin contact, to protect hands.

B. Provide sufficient quantities of protective clothing to assure a minimum of four (4) complete disposable outfits per day for each individual performing abatement Work.

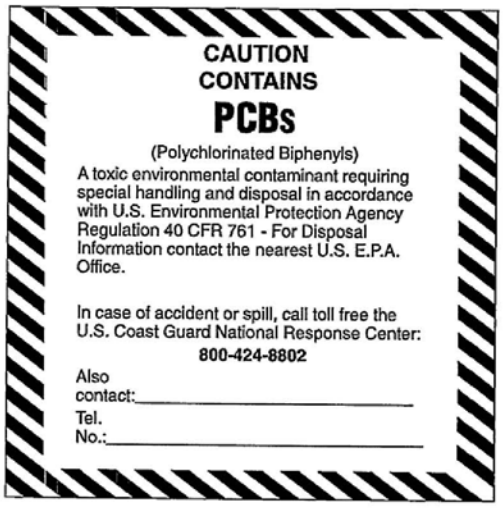
C. Eye protection and hard hats shall be provided and made available for all personnel entering any Work Area.

D. Authorized visitors shall be provided with suitable protective clothing, headgear, eye protection, and footwear whenever they enter the Work Area.

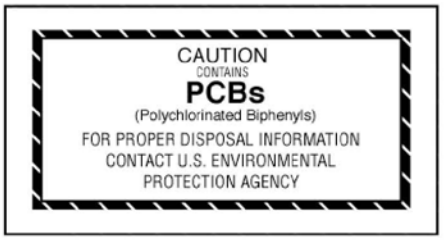
2.2 SIGNS AND LABELS, CONTAINERS

A. Provide warning signs and barrier tapes at all approaches to Hazardous Waste generation Work Areas. Locate signs at such distance that personnel may read the sign and take the necessary protective steps required before entering the area.

B. For PCB Hazardous Waste, provide the appropriate “Large PCB Mark” or “Small PCB Mark” (M_L or M_S per 40 CFR 761) as shown below, of sufficient size to be clearly legible, for display on waste containers (bags, boxes, rolloffs or drums) which will be used to contain or transport PCB contaminated material, in accordance with 40 CFR 761. In addition, U.S. Department of Transportation (DOT) 49 CFR Parts 171 and 172 requires the name and UN number of the material to be on the bags or drums, and, if shipped in bulk (rolloffs, Gaylord boxes, etc) the bulk container must also be labeled: Polychlorinated Biphenyl, solid mixture UN 3432.



M_L



M_S

C. The PCB materials are also NYS Hazardous Waste, and must have a label stating the following on each container :

HAZARDOUS WASTE--Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority, or the U.S. Environmental Protection Agency.

Proper DOT Shipping Name_____

Generator's Name, Address, City, State, ZIP and phone_____

Generator's EPA Identification Number, Waste code_____

Accumulation Start Date

_____

Manifest Tracking Number

_____

D. Provide 6 mil plastic disposal bags with PCB caution labels.

1. The "Small PCB Label" (M_S per 40 CFR 761) may be used as shown above. Bags shall also be labeled with U.S. DOT required markings per 49 CFR 172, Polychlorinated Biphenyl, solid mixture UN 3432.
2. Labeled PCB waste containers or bags shall not be used for non-PCB waste or trash. Any material placed in labeled containers or bags, whether turned inside out or not, shall be handled and disposed of as PCB waste.

2.3 DAILY PROJECT LOG

A. Provide a Daily Project Log. The log shall contain on title page the Project name and number; name, address and phone number of Owner; name, address and phone number of Environmental Consultant; name, address and phone number of Abatement Contractor; and emergency numbers including, but not limited to local Fire/Rescue department.

B. All entries into the log shall be made in non-washable, permanent ink and such pen shall be strung to or otherwise attached to the log to prevent removal from the log-in area. Under no circumstances shall pencil entries be permitted.

C. The Project Supervisor shall document all Work performed daily and note all inspections.

2.4 SCAFFOLDING AND LADDERS

A. Provide all scaffolding and/or staging as necessary to accomplish the Work of this Contract. Scaffolding may be of suspension type or standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type or cantilever type. The type, erection and use of all scaffolding and ladders shall comply with all applicable OSHA construction industry standards.

B. Provide scaffolding and ladders as required by the Environmental Consultant for the purposes of performing required inspections.

2.5 SHIPPING CONTAINERS AND PACKAGING

A. Provide packaging in accordance with 49 CFR 173 Packaging Group 9, such as 30 or 55 gallon capacity fiber, plastic, or metal drums, Gaylord Boxes or other Intermediate Bulk Containers (IBCs), or non-siftable bulk containers, capable of being sealed air and water tight if hazardous waste has the potential to damage or puncture disposal bags. Affix hazardous waste caution labels on lids of drums, and opposite sides of drums or bulk containers, as well as the ends of bulk containers. Recovery or salvage drums must be acceptable for disposal of hazardous waste. Prior approval of drums is required. Drums or containers must meet the required OSHA, EPA (40 CFR Parts 260-264 and 300), and DOT Regulations (49 CFR Parts 171-178). Use of damaged containers shall not be allowed.

2.6 EQUIPMENT AND MATERIALS

A. All dry vacuuming performed under this contract shall be performed with HEPA filter equipped industrial vacuums conforming to ANSI Z9.2.

B. Any power tools used to drill, cut into, or otherwise disturb hazardous material shall be manufacturer equipped with HEPA filtered local exhaust ventilation, unless specified otherwise.

C. All polyethylene (plastic) sheeting used on the Project (including but not limited to sheeting used for critical and isolation barriers, fixed objects, walls, floors, ceilings, waste container) shall be at least 6 mil fire retardant sheeting.

D. Absorbant Material: Absorbent Material: Clay, soil or any commercially available absorbent used for the purpose of absorbing hazardous or potentially hazardous materials.

2.7 RESPIRATORY PROTECTION

A. Establish a respirator program as required by ANSI Z88.2 and 29 CFR 1910.134. Provide respirator training.

B. Select respirators from those approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services. High Efficiency Particulate Air (HEPA) respirator filters shall be approved by NIOSH and shall conform to the OSHA requirements in 29 CFR 1910.134.

C. Respirators shall be individually fit-tested to personnel under the direction of an Industrial Hygienist initially and on a yearly basis. Fit-tested respirators shall be permanently marked to identify the individual fitted, and use shall be limited to that individual.

D. A storage area for respirators shall be provided by the Contractor in the clean portion of the decontamination enclosure where they will be kept in a clean environment

E. The Contractor shall provide and make available a sufficient quantity of respirator filters so that filter changes can be made as necessary during the work day. Filters will be removed and discarded during the decontamination process. Filters cannot be reused. Filters must be changed if breathing becomes difficult.

F. Filters used with negative pressure air purifying respirators shall not be used any longer than one eight (8) hour work day.

G. Any authorized visitor, Worker, or supervisor found in the Work Area not wearing the required respiratory protection shall be removed from the Project site and not be permitted to return.

PART 3 - EXECUTION

3.1 HAZARDOUS WASTE GENERATION AND ON-SITE STORAGE

A. All waste shall be stored, handled, transported and disposed of in accordance with all federal, state, and local guidelines and regulations. The Contractor shall obtain all permits, licenses, etc., which are necessary for the storing, transporting and disposing of hazardous waste. The Contractor shall develop all applicable manifests, Waste Profile Sheets, LDR Forms and any other documentation and coordinate with the Owner regarding proper signatures.

B. All hazardous waste generated shall be placed into 6 mil plastic disposal bags or other suitable container upon detachment from the substrate. Large components with residue shall be wrapped in one layer of 6 mil plastic sheeting. Sharp components likely to tear disposal bags shall be placed in fiber drums or boxes and then wrapped with sheeting.

C. All construction and demolition debris determined by the Environmental Consultant to be contaminated with hazardous waste shall be handled and disposed of as hazardous waste.

D. All hazardous waste must be located at or near the point of generation, under the control of the Project Supervisor. Up to 55 gallons may be stored at the point of generation for an indefinite period, but any greater than 55 gallons must be moved within three 3 days to a Container Storage Area (CSA) as specified in 6 NYCRR Section 372.2 "Standards Applicable to Generators of Hazardous Waste", or off-site. Waste may be stored at the CSA for 90 days (large quantity generator) or 180 days (small quantity generator), during which labeling, inspections, and other requirements must be met as described in 6 NYCRR Section 372.2, Section 373-3.1(d) and Subpart 373-3.

E. The Contractor shall identify and classify the hazardous waste generated through the performance of the work as per the governing regulations, and in accordance with the waste stream TCLP results. The Contractor shall utilize the TCLP results to confirm the requirements for handling, storing, transporting and disposing of the hazardous waste.

G. On-site Storage Requirements.

1. Each waste dumpster\container shall have completed hazardous waste label with facility name, correct EPA ID number, full address, waste codes, and waste information.
2. Appropriate hazardous waste storage and contents labels shall also be posted on the containers.
3. Since this is considered a main storage area for the project, maintain an initial and thence weekly hazardous waste storage area inspection logs. Weekly inspection records shall be maintained for three years.
4. Each dumpster\container shall also post all relevant DOT labels to indicate proper waste types.
5. Each dumpster\container shall identify the accumulation start date. Maximum storage limit is 90 days from the date of accumulation.
6. All dumpsters and containers being stored outside shall meet EPA RCRA container requirements and shall not leak. All dumpsters and containers must be fully covered and protected from the elements as well as secured by lock when not in use.
7. Spill kit shall be maintained in the CSA.
8. Regarding the posting of emergency numbers, Contractor shall coordinate with facility and post all required emergency numbers including facility contact(s), Contractor emergency numbers and local fire, police and medical facility numbers. Sign shall be posted in the lockable CSA.

H. The CSA and personnel managing it must also meet the following requirements of 6 NYCRR 373:

1. Preparedness and Prevention provisions of Section 373-3.3
2. Secondary containment requirements of 373-2.9(f)(1)
3. Personnel training in section 373-3.2
4. Contingency plans and emergency procedures in section 373-3.4 subparagraph 376.1(g)(1)(v)

5. The containers must be dated when placed in storage, and accumulation times must be observed.
6. The total amount of hazardous waste stored in the CSA at any given time must not exceed the maximum for the current generator status(6,000kg-SQG, no limit-LQG).
7. A label or sign stating "Hazardous Waste" must identify all areas and containers used to accumulate hazardous waste.

I. Closure of the CSA. If a CSA was created specifically for the Hazardous waste generation work, once the work is complete, the Contractor shall immediately close out the CSA, as per 373-3.7(b) and (e).

J. The Contractor is required to provide temporary protection of the building (i.e. roof, window openings, construction joints, etc.) as applicable for the work, at the end of each Work shift so as to maintain the building in a watertight condition. Any damage to the facility caused by inadequate Contractor protection shall be the responsibility of the contractor.

PART 4 - DISPOSAL OF HAZARDOUS WASTE

4.1 TRANSPORTATION AND DISPOSAL SITE

A. The Contractor's Hauler and Disposal Facility shall be approved by the Owner. Prior to the hazardous waste being removed from the site, written notice must be provided and confirmation received from the intended disposal facility, indicating proper authority to receive the hazardous waste, as well as the ultimate disposal method for the waste. The notice shall be acknowledged in writing via a disposal facility representative's signature, printed name and title, as well as phone number, in compliance with 6 NYCRR 372.2(b)(2). For disposal within New York State, facilities must be specifically permitted to accept hazardous waste. In addition, The Contractor is responsible for securing appropriate treatment or disposal for the generated hazardous waste streams at a permitted TSDF, if necessary, in compliance with all regulatory requirements, and for obtaining a copy of the waste manifest and waste profile of the treated waste as executed by the TSDF. If the manifest is not returned within 35 calendar days from removal from the site, the contractor shall notify the Owner and the NYS DEC, and initiate an investigation as required.

B. The Contractor shall give at least 24-hour notification prior to removing any waste from the site. Waste shall be removed from the site only during normal working hours unless otherwise specified. No waste may be taken from the site unless the Contractor and Environmental Consultant are present, and the Owner's Representative/Environmental Consultant authorizes the release of the waste. The Owner's Representative/Environmental Consultant must be on-site for all hazardous waste shipment removals and will be responsible for inspection of the waste shipment as well as signoff on the hazardous waste manifest on behalf of the owner to allow the hazardous waste shipment to leave the site.

C. The Contractor shall supply all required placard and labeling and shall have an appropriately DOT - trained individual to prepare the waste container and inspect the packaging of the hazardous waste.

D. All hazardous waste generated as part of the project shall be removed from the site within ten (10) calendar days after successful completion of all hazardous waste generation work. However, all disposal facility permits/licenses, waste profiles, LDR forms, hauler permit(s), and all other necessary paperwork must be submitted and approved by the Owner's Representative/Environmental Consultant before the waste is removed from the site.

E. Upon arrival at the Project Site, the Hauler must possess and present to the Environmental Consultant a valid DEC Part 364 Waste Hauler's Permit. The Environmental Consultant may verify the authenticity of the hauler's permit with the proper authority.

F. the Hauler, with the Contractor and the Environmental Consultant, shall inspect all material in the transport container prior to taking possession and signing the Hazardous Waste Manifests.

G. Transporters shall maintain waste manifest and shipment record forms. All transporters are required to obtain and maintain NYS DEC Part 364 Waste Transporter permits and, if applicable, a NYC Fire Department permit for transporting flammables. The Part 364

Permit shall have the license plate number of the vehicle, the expiration date of the permit, the type of waste the hauler can transport and the TSDF to which the hauler can transport the waste. The transporter must also have all applicable, current waste transportation permits for the states where the proposed disposal facilities are located.

4.2 WASTE SHIPMENT STORAGE CONTAINERS

A. All waste shipment storage containers shall be fully enclosed and lockable (i.e. enclosed dumpster, trailer, etc.).

B. The Environmental Consultant shall verify that the waste shipment storage container and/or truck tags (license plates) match that listed on the DEC Part 364 permit. Any waste shipment storage container not listed on the permit shall be removed from the site immediately prior to storage of any material from the site.

C. The waste shipment storage container shall be plasticized and sealed with one layer of 6 mil plastic. Once on-site, it shall be kept locked at all times, except during load out. The waste shipment storage container shall not be used for storage of equipment or contractor supplies.

D. While on-site, the waste shipment storage container shall be labeled with DEC Hazardous Waste Warning Labels as specified in Section 2.02.

E. The DEC Waste Hauler's Permit number shall be stenciled on both sides and back of the waste shipment storage container.

F. The waste shipment storage container is not permitted to be loaded unless it is properly plasticized, has the appropriate danger signage affixed, and has the permit number appropriately stenciled on the container.

G. The Owner may initiate random checks at the Disposal Site to ensure that the procedures outlined herein are complied with.

4.3 HAZARDOUS WASTE MANIFESTS & DISPOSAL DOCUMENTATION

A. The Contractor is responsible for securing appropriate treatment or disposal for the waste streams at a permitted TSDF, in compliance with all requirements, and for obtaining a copy of the waste manifest (interim storage and final disposal) as executed by the TSDF. If the manifest is not returned within 35 calendar days from removal from the site, the Contractor shall notify the Owner and the NYS DEC, and initiate an investigation as required. The Contractor shall contact the EPA and file an Exception report if the manifest is not returned within 45 days.

B. A Uniform Hazardous Waste Manifest shall be utilized solely as the waste Manifest for transportation. A hauler billing form or bill of lading may be used if the hauler needs an independent record, but shall not be used as a shipping document.

C. The Manifest shall be completed by the Contractor and verified by the Owner's Representative/Environmental Consultant that all the information and amounts are accurate and the proper signatures are in place.

D. The Manifest shall have the appropriate signatures of the Owner's Representative (the Generator) and the Hauler representative prior to any waste being removed from the site.

E. Copies of the completed Manifest if applicable, shall be retained by the Environmental Consultant and shall remain on-site for inspection.

F. Upon arrival at the Disposal Site, the Manifest shall be signed by the Disposal Facility operator to certify receipt of hazardous and asbestos wastes covered by the manifest.

G. The Disposal Facility operator shall return the original Manifest to the Owner's Representative or the disposal facility state as required by the DEC in 6 NYCRR 372 within 35 days. The Owner's Representative/Environmental Consultant must call the facility to investigate if the Manifest is not returned within 35 days and contact the DEC and file an Exception report if not returned within 45 days.

H. Copies of all waste disposal manifests and disposal logs (copies are acceptable for electronic closeout submittal review) shall be submitted by the Contractor to the Owner with the final close-out documentation.

I. The Contractor must also submit reports and records per the requirements of 6 NYCRR 372.2.

J. Payment for disposal of hazardous waste will not be made until a signed copy of the manifest from the treatment or disposal facility certifying the amount of hazardous waste delivered is returned for each load of waste removed from the site. The waste disposal log originals must be provided to the Owner.

K. Unless directed otherwise, the Contractor shall file the annual report and fee report, if applicable, for the hazardous waste shipped, and provide closure notification to EPA and DEC with a full copy to the Owner immediately upon completion of the work.

END OF SECTION 028600

SECTION 028700 - REMOVAL AND DISPOSAL OF UNIVERSAL WASTE

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This specification covers the removal and disposal of Universal Waste, including lamps such as fluorescent and high-intensity discharge (HID) lamps, mercury-containing equipment (MCE) such as thermostats and switches, batteries and pesticides (not PCB lighting ballasts).

B. Universal Wastes are regulated by the United States Environmental Protection Agency (EPA) under 40 CFR Part 273 and by New York State Department of Environmental Conservation (NYS DEC) under 6 NYCRR (New York Codes, Rules and Regulations) Part 374-3. The EPA regulation identifies Universal Waste that includes MCE and aerosol cans whereas the NYS DEC regulation addresses mercury thermostats only and does not include aerosol cans. Universal Waste was expanded to include MCE by NYS DEC's Commissioner Policy CP-39, "Mercury-Containing Equipment" promulgated May 8, 2006. This CP-39 was issued to align with EPA's inclusion of MCE. MCE shall be recycled as per current regulations, instead of disposed as Universal Waste. NYS DEC did not include aerosol cans as Universal Waste; therefore, aerosol cans are to be disposed of as hazardous waste. Demolition and removal of materials shall be as required to support the work.

C. 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.

D. All Work shall be performed 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.

E. Working hours shall be as required and approved by the Owner. Removal activities including, but not limited to, work area preparation, gross removal activities, cleaning activities, waste removal, etc. may need to be performed during 'off-hours' (including nights and weekends). In addition, multiple mobilizations may be required to perform the work identified in this project. The Contractor shall coordinate and schedule all Work with the facility and Owner's representative.

1.2 SUBMITTALS

A. Submittal requirements under specification sections 028600, 028700, 029001 are to be merged into a single package with documents supporting both scopes of work.

B. Pre-Work Submittals: Within seven (7) days prior to the pre-construction conference, the Contractor shall submit an electronic copy of the documents listed below for review and Code Compliance approval prior to the commencement of activities:

1. Training & Certifications

   a. Certificate of on-site supervisor for completion of the OSHA 40-hour Health and Safety course for handling hazardous waste and spills, including most recent refresher training.
   b. OSHA 8-hour supervisor training for hazardous waste.
   c. List of the employees scheduled to perform this work and certificates of workers, for successful completion of the OSHA 40-Hour Health and Safety Course for Hazardous Waste and spills, including most recent refresher training.
   d. Valid United States Department of Transportation (DOT) training for supervisor and all employees loading waste and maintaining on-site waste storage area. This training shall include: general awareness / familiarization training; function specific training; safety training; security awareness training; and in-depth security training.
   e. Employees managing Universal Waste must also meet the Personnel training requirements of EPA 40 CFR Section 273.36. Provide proof of training for these employees.

2. Transportation & Disposal

   a. Valid Universal Waste Transporter NYS Part 364 permit for all transporters.
   b. Valid Universal Waste Transport vehicle permit for all transporters for each state the waste is being transported through to reach the Treatment, Storage and Disposal Facility (TSDF).
   c. Valid DOT vehicle permit for Transporters.
   d. Transfer Facility Permit (if used) including the name, address and EPA ID No. of the facility, contact person, and acknowledgement letter stating that the facility has the capacity and is permitted to accept the waste from the project site.
   e. Final Disposal Facility permit including the name, address and EPA ID No. of the facility, contact person, and acknowledgement letter stating that the facility has the capacity and is permitted to accept the waste from the project site.
   f. The TSDF permit(s) must identify the waste material(s) to be received.
   g. Draft Waste Profile.

3. Site-specific

   a. If the Contractor introduces any chemical into the work environment, a SDS for each chemical must be presented to the Owner's Representative for review and approval prior to use.
   b. Progress Schedule:

      1) Show the complete sequencing of removal activities and the sequencing of Work within each building, wing or section of building.

2) Show the dates for the beginning and completion of each major element of Work including substantial completion dates for each Work Area, building or phase.

c. Project Plan: Provide a description of the methods, procedures and materials to be used in performing the work and handling all universal wastes. Also provide a schedule identifying specific work areas and duration. The schedules will be utilized to schedule facility and third-party environmental consultant requirements.

d. Health and Safety Plan information for material handling and emergency procedures.

1) Waste types being generated.
2) Waste storage details (drums, containers, or dumpsters, types, with cover?).
3) Waste containment details. How is the waste being stored? (indoors or outdoors, is it being contained to prevent impact to adjoining spaces or environment?) Appropriate fire extinguisher(s) and spill kit included?.
4) Contractor emergency evacuation plan requirements and evacuation route for the project specific areas.
5) Duration of waste generation and contract.
6) Contractor and Project team emergency contact numbers.

f. Do not start work until submittals are returned with the Owner's Representative stamp indicating that the submittal is approved for unrestricted use.

C. On-Site & During Construction:

1. The following submittals, documentation, and postings shall be maintained on-site by the Contractor during abatement activities at a location approved by the Environmental Consultant:

a. Approved pre-work submittals.
b. Project Documents (specifications and drawings).
c. Applicable regulations.
d. Updated licenses/permits and acknowledgement letters for any changes in transporter or disposal site.
e. For each employee, current annual medical respiratory clearance.
f. For each employee, current satisfactory respiratory fit test results.
g. Contractor shall provide weekly update, including initial container storage dates for each container stored, an approximate estimate of amount of waste being generated during each work-day, week or month that it is stored on-site. The actual weight of the waste, excluding the weight of the dumpster, shall be identified.
h. Completed Waste Profile form(s).
i. List of emergency phone numbers.
j. Waste disposal log.
k. Daily Project Log.

l. Copy of Waste manifest/shipment record for each load of waste that is removed from site.

m. Copy of completed universal waste manifest/shipment record including legible transporter and disposal facility information, dates and times of waste shipment departures / arrivals, and signatures, for each load of waste, within 35 days of waste being removed from site.

1.03 DEFINITIONS

A. Large Quantity Handler (LQH) of Universal Waste shall be a waste handler who accumulates 5,000 kilograms or more of Universal Waste at any time. This designation as a large quantity handler of Universal Waste is retained through the end of the calendar year in which 5,000 kilograms (11,000 pounds) or more total of Universal Waste is accumulated. The LQH shall notify the EPA, acquire or coordinate with a facility regarding an EPA identification number, and provide records for each shipment. The LQH shall ensure all employees are thoroughly familiar with proper waste handling and emergency procedures, relative to their responsibilities during normal facility operations and emergencies.

B. Small Quantity Handler of Universal Waste (SQH) shall be a waste handler who does not accumulate 5,000 kilograms (11,000 pounds) or more of total Universal Waste (batteries, pesticides, MCE, or lamps, calculated collectively) at any time.

C. Destination Facility shall be a facility that can legally accept Universal Waste from off-site so that the Universal Waste can be treated, disposed, or recycled in accordance with regulatory requirements.

D. Universal Waste Transporter shall be anyone who transports Universal Waste. In New York, Universal Waste Transporters that transport greater than 500 pounds of Universal Waste in a single shipment must be a permitted Universal Waste Transporter pursuant to Federal and State regulations. Proper notification with the receiving handler agreeing to receive the shipment is required by the Universal Waste Transporter.

E. Universal Waste consists of the following discarded materials, as identified in 40 CFR Part 273 and 6 NYCRR 374-3: Fluorescent light and high-intensity discharge (HID) lamps, mercury thermostats, batteries, and pesticides. CP-39 expanded thermostats to MCE as discussed in section 1.01 above. Removed or replaced MCE must be delivered to a designated mercury collection site as per current NYC DEC regulations. Disposal of MCE in a solid waste management facility is prohibited. PCB ballasts/capacitors from light fixtures shall not be treated as Universal Waste; they shall be handled and disposed of as hazardous waste. See the Hazardous Waste Disposal Specification for these wastes.

1.04 PROJECT SUPERVISOR

A. The Contractor shall designate a full-time Project Supervisor who shall meet the following qualifications:

1. The Project Supervisor shall be trained in hazardous waste removal/generation procedures and hazardous waste management in NYS, via a 40-hour HAZWOPER and 8-hour Supervisor training course, as well as appropriate RCRA and DOT training.
2. The Project Supervisor shall have a minimum of one year experience as a supervisor.
3. The Project Supervisor must be able to read and write English fluently, as well as communicate in the primary language of the Workers.

B. If the Project Supervisor is not on-site at any time whatsoever, all Work shall be stopped. The Project Supervisor shall remain on-site until the Project is complete. The Project Supervisor cannot be removed from the Project without the written consent of the Owner and the Environmental Consultant.

C. The Project Supervisor shall maintain a bound Daily Project Log that includes the Waste Disposal Log required by section 4.03 of this specification.

D. 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 Contractor primary point of contact for the Environmental Consultant.

E. As required by applicable regulations, prior to assignment to universal waste work, instruct each employee with regard to the hazards of the generated waste, safety and health precautions, and the use and requirements of protective clothing and equipment, as well as the Contractor emergency action plan.

PART 2 - PRODUCTS

2.1 PROTECTIVE CLOTHING

A. Provide personnel utilized during the Project with disposable protective whole body clothing, head coverings, and foot coverings. Provide appropriate disposable gloves, suitable to prevent skin contact, to protect hands.

B. Provide sufficient quantities of protective clothing to assure a minimum of four (4) complete disposable outfits per day for each individual generating or packaging Universal Waste.

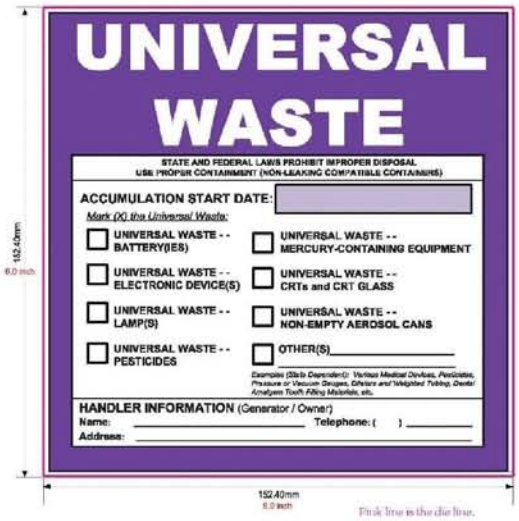
C. Eye protection and hard hats shall be provided and made available for all personnel entering any Work Area.

D. Authorized visitors shall be provided with suitable protective clothing, headgear, eye protection, and footwear whenever they enter the Work Area.

2.2 SIGNS AND LABELS, CONTAINERS

A. Provide warning signs and barrier tapes at all approaches to Universal Waste generation Work Areas. Locate signs at such distance that personnel may read the sign and take the necessary protective steps required before entering the area.

B. Universal waste containers must be marked with the words that clearly indicate the type of waste in the container, for example, "Universal waste – Batteries" or "Universal waste – Bulbs" as per 40 CFR 273.13 and 273.34;



2.3 DAILY PROJECT LOG

A. Provide a Daily Project Log. The log shall contain on title page the Project name and number; name, address and phone number of Owner; name, address and phone number of Environmental Consultant; name, address and phone number of Abatement Contractor; and emergency numbers including, but not limited to local Fire/Rescue department.

B. All entries into the log shall be made in non-washable, permanent ink and such pen shall be strung to or otherwise attached to the log to prevent removal from the log-in area. Under no circumstances shall pencil entries be permitted.

C. The Project Supervisor shall document all Work performed daily and note all inspections.

2.4 SCAFFOLDING AND LADDERS

A. Provide all scaffolding and/or staging as necessary to accomplish the Work of this Contract. Scaffolding may be of suspension type or standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type or cantilever type. The type, erection and use of all scaffolding and ladders shall comply with all applicable OSHA construction industry standards.

B. Provide scaffolding and ladders as required by the Environmental Consultant for the purposes of performing required inspections.

2.04 SHIPPING CONTAINERS AND PACKAGING

A. Provide packaging in accordance with 49 CFR 173 Packaging Group 9, such as 30 or 55 gallon capacity fiber, plastic, or metal drums, Gaylord Boxes or other Intermediate Bulk Containers (IBCs), or non-siftable bulk containers. Affix universal waste caution labels on lids of drums, and opposite sides of drums or bulk containers, as well as the ends of bulk containers. Recovery or salvage drums must be acceptable for disposal of universal waste. Prior approval of drums is required. Drums or containers must meet the required OSHA, EPA (40 CFR Parts 260-264, 273 and 300), and DOT Regulations (49 CFR Parts 171-180). Use of damaged containers shall not be allowed.

2.05 EQUIPMENT AND MATERIALS

A. All dry vacuuming performed under this contract shall be performed with HEPA filter equipped industrial vacuums conforming to ANSI Z9.2.

B. All polyethylene (plastic) sheeting used on the Project (including but not limited to sheeting used for critical and isolation barriers, fixed objects, walls, floors, ceilings, waste container) shall be at least 6 mil fire retardant sheeting.

C. Absorbent Material: Clay, soil or any commercially available absorbent used for the purpose of absorbing hazardous or potentially hazardous materials.

PART 3 - EXECUTION

3.1 GENERATING UNIVERSAL WASTE

A. Employee training shall ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures, relative to their responsibilities during normal operations and emergencies, as well as to the type of waste they are handling.

B. MCE shall be segregated from other Universal Wastes to allow for required recycling.

C. Battery Labels: The container(s) holding intact batteries shall be labeled or marked as “Universal Waste – Battery(ies)”, “Waste Battery(ies)”, or “Used Battery(ies)”.

D. Lamp Labels: The container(s) holding lamps shall be labeled or marked as “Universal Waste – Lamp(s)”, “Waste Lamp(s)”, or “Used Lamp(s)”.

E. MCE Labels: The container(s) holding MCE shall be labeled or marked as “Universal Waste – Mercury-Containing Equipment”, “Waste - Mercury-Containing Equipment”, or “Used Mercury-Containing Equipment”.

F. Mercury Thermostat Labels: The container(s) holding mercury thermostats only may be labeled or marked as “Universal Waste – Mercury Thermostat(s)”, “Waste Mercury Thermostat(s)”, or “Used Mercury Thermostat(s)”.

G. Pesticide Labels: The container(s) holding pesticides shall be labeled or marked as "Universal Waste – Pesticide(s)" or "Waste Pesticide(s)".

H. Once the properly labeled containers holding the Universal Waste have been filled and sealed, they shall be stored in designated accumulation areas as agreed upon by the Owner's Representative and Contractor. They shall not be stored in transportation vehicles, or on-site for more than one year from the date the waste storage was initiated.

I. Documentation when Universal Waste in storage was first accumulated shall be provided. This is to be done by dating and labeling the waste with the date of the earliest accumulation that can document the length of time the Universal Waste has been accumulated.

J. Maintenance of an inventory system on-site that identifies the earliest date that any Universal Waste in a group of Universal Waste items or a group of containers of Universal Waste became a waste was received.

K. Any waste developed from the work that exhibits one or more characteristics of hazardous waste, that are not specifically identified by EPA and NYS DEC as Universal Waste, must be handled accordingly and not as a Universal Waste. See the Hazardous Waste Disposal Specification section 02 86 00 for those waste types.

PART 4 - DISPOSAL OF UNIVERSAL WASTE

4.1 TRANSPORTATION AND DISPOSAL

A. The Contractor's Hauler and Disposal Facility shall be approved by the Owner. The Contractor is responsible for securing appropriate treatment or disposal for the generated universal waste streams at a permitted TSDF, if necessary, in compliance with all regulatory requirements, and for obtaining a copy of the waste manifest/shipping record and waste profile of the treated waste as executed by the TSDF.

B. The Contractor shall give at least 24 hour notification prior to removing any waste from the site. Waste shall be removed from the site only during normal working hours unless otherwise specified.

C. All universal waste generated as part of the project shall be removed from the site within ten (10) calendar days after successful completion of work. However, all disposal facility permits/licenses, waste profiles, hauler permit(s), and all other necessary paperwork must be submitted and approved by the Environmental Consultant before the universal waste is removed from the site. Waste stream samples, if required, shall be collected by the Environmental Consultant for TCLP analysis and the results utilized by the Contractor for waste stream characterization and disposal determination.

D. Upon arrival at the Project Site, the Hauler must possess and present to the Environmental Consultant a valid New York State Department of Environmental Conservation Part 364 Waste Hauler's Permit. The Environmental Consultant may verify the authenticity of the hauler's permit with the proper authority.

E. The Hauler, with the Contractor and the Environmental Consultant, shall inspect all material in the transport container prior to taking possession and signing the Universal Waste Manifest/shipping record.

4.2 WASTE SHIPMENT STORAGE CONTAINERS

A. All waste shipment storage containers shall be fully enclosed and lockable (i.e. enclosed dumpster, trailer, etc.).

B. The Environmental Consultant shall verify that the waste shipment storage container and/or truck tags (license plates) match that listed on the New York State Department of Environmental Conservation Part 364 permit. Any waste shipment storage container not listed on the permit shall be removed from the site immediately prior to storage of any material from the site.

C. Once on-site, it shall be kept locked at all times, except during load out. The waste shipment storage container shall not be used for storage of equipment or contractor supplies.

D. While on-site, the waste shipment storage container shall be labeled with Universal Waste Labels.

E. The waste shipment storage container is not permitted to be loaded unless it is properly plasticized, has the appropriate danger signage affixed.

F. The Owner may initiate random checks at the Disposal Site to ensure that the procedures outlined herein are complied with.

4.3 WASTE MANIFEST/SHIPMENT RECORDS & DISPOSAL DOCUMENTATION

A. A Universal Waste Manifest/Shipping Record (UWMSR) shall be utilized solely as the waste record documentation for transportation. A hauler billing form or bill of lading may be used if the hauler needs an independent record, but shall not be used as a shipping document.

B. The UWMSR, shall be completed by the Contractor and verified by the Environmental Consultant that all the information and amounts are accurate and the proper signatures are in place.

C. The UWMSR, if applicable, shall have the appropriate signatures of the Owner's Representative (the Handler) and the Hauler representative prior to any waste being removed from the site.

D. Copies of the completed UWMSR, shall be retained by the Environmental Consultant and shall remain on-site for inspection.

E. The Contractor shall utilize the Waste Disposal Log provided by the Owner. This log shall be maintained by the Project Supervisor and shall be kept on-site at all times. (See Appendix A.)

F. Originals of all UWMSRs and disposal logs (copies are acceptable for electronic closeout submittal review) shall be submitted by the Contractor to the Owner with the final close-out documentation.

G. Payment for disposal of universal waste will not be made until a signed copy of the manifest/shipment record from the treatment or disposal facility certifying the amount of universal waste delivered is returned for each load of waste removed from site, the originals are furnished to the Owner.

H. Off-Site Shipment of Universal Waste

1. Off-Site shipments shall meet the requirements for off-site shipments and handlers / transporters are prohibited from sending or taking Universal Waste to a place other than a designated Universal Waste handler or a Universal Waste destination facility.
2. LQHs of Universal Waste must notify EPA in writing and develop an EPA identification number or coordinate with the facility regarding use of their EPA identification number, prior to exceeding 5,000 kilograms of Universal Waste on-site.
3. SQHs do not need to notify EPA, receive an EPA identification number or keep records of shipments of Universal Waste.
4. LQHs must keep a record of all Universal Waste shipments received or sent off-site and must retain those records for at least three (3) years from the date of receipt or shipment. Records may include invoices, manifest/shipment records, logs, bills of lading, or other shipping documents.
5. The Contractor shall provide certified copies of all receipts obtained from designated mercury recycling collection sites within 30 days of MCE acceptance by collection site.
6. The Contractor shall furnish all certified copies of manifest/shipment records (interim storage and final disposal) within regulatory requirements. Within 30 days from acceptance of the waste by the disposal facility, the Contractor shall provide the Owner with Certificate of Disposal documents, as a requirement for final payment.

END OF SECTION 028700

SECTION 029000 - LABORATORY EQUIPMENT DECOMMISSIONING AND REMOVAL

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. This Section specifies the procedures for the decommissioning, removal and disposal of various ventilation components including ventilation hoods, associated sheet metal exhaust ductwork, associated exhaust fans, acid waste glass piping, associated traps and sump basins at the University at Buffalo's Furnas Hall.

B. The work shall consist of the testing, removal, inspection, cleaning, packaging, labeling, and the transportation and disposal of ventilation hoods, associated sheet metal exhaust ductwork, associated exhaust fans, acid waste glass piping, associated traps and sump basins, and all contaminated deposits found within the components as applicable.

C. Disturbance or dislocation of the system components may cause worker exposures to potential chemical or heavy metal residue remaining in the materials.

D. Consistent with OSHA's Hazard Communication Standard, the Contractor shall appraise all of his workers, supervisory personnel, subcontractors and consultants whom will be at the job site of the potential hazards and of proper work procedures that must be followed.

E. Pre-decommissioning and Post-cleaning surface wipe sampling shall be conducted in accordance with ASTM Standard E 1792. It is important to measure and record the dimensions of the area being sampled to properly quantify contaminant levels. Surface wipe samples shall be analyzed by a NYSDOH ELAP accredited and AIHA certified laboratory for the following metals, at a minimum: cadmium, chromium, copper, lead, mercury (separate wipe required), nickel, silver, tin and zinc. All waste streams shall be analyzed by a NYSDOH accredited laboratory for the hazardous waste characteristics.

F. This Section includes a combination of both Prescriptive and Performance specifications. Prescriptive outlines the specific means and methods to be employed by the Contractor including an exact set of particulars. Prescribing materials and methods for a defined task. The Contractor simply builds the item as specified. The Performance specifications describe the minimal acceptable outcome for a given task or project. The Contractor chooses materials and methods, as long as they meet the basic requirements.

1.2 RELATED DOCUMENTS

A. This specification is to be used in conjunction with contract documents.

1.3 GLOSSARY OF TERMS

1. Where acronyms or abbreviations are used but not identified in the specifications or other contract documents, they are defined to mean the industry recognized name or trade association, standards generating organization, governing owner or other entity applicable to context of text provision.

1.4 LAWS, REGULATIONS AND STANDARDS

A. 29 CFR 1910.134 OSHA Respiratory Protection

B. 29 CFR 1926 OSHA Construction Standard

C. 29 CFR 1910.1200 OSHA Hazard Communication

D. 29 CFR 1910.120 OSHA Hazwoper

E. 29 CFR 1926.502 Fall Protection

F. 40 CFR Part 260 USEPA Hazardous Waste Management Regulation

G. 6 NYCRR Part 370 series NYSDEC Hazardous Waste Management Regulations

H. American National Standard ANSI/ASSE Z9.11 – 2016 Laboratory Decommissioning

1.5 SUBMITTALS

A. Work shall not proceed until submittals are approved. Prior to project commencement, the Contractor shall submit the following submittals to the consultant:

1. Decommissioning Work Plan: Submit alternative methods, if any, to the removal procedures as specified in this section. Any requested change to the procedures listed herein must provide for the control of dust, collection of wastewater and use of the negative pressurized work areas. See requirements under Quality Assurance.

2. Sampling and Analysis Plan: Pre-decommissioning and post-cleaning surface wipe sampling shall be conducted in accordance with ASTM Standard E 1792. It is important to measure and record the dimensions of the area being sampled to properly quantify contaminant levels. Surface wipe samples shall be analyzed by a NYSDOH ELAP accredited and AIHA certified laboratory for the following metals, at a minimum: cadmium, chromium, copper, lead, mercury (separate wipe required), nickel, silver, tin and zinc. All waste streams shall be analyzed by a NYSDOH accredited laboratory for the hazardous waste characteristics.

3. Copies of the Contractor's written Respiratory Protection Program and Health and Safety Plan.

4. An affidavit indicating that each Contractor's employee has passed a physical exam for use of a respirator and has been provided with a qualitative or quantitative fit test, both within the last one year, at a minimum.

5. Copy of certifying physician's report for each employee indicating physician's opinion that employee can safely work while wearing respiratory protection.

6. An affidavit indicating completion of training (Hazwoper and site-specific training, at a minimum) and if appropriate, certifications for each Contractor's employee utilized on site for the project.

7. Products: Submit manufacturers' safety data sheets (SDSs) for cleaning materials and other chemicals used on this project.

8. Contractor's Emergency Response Plan (can be part of the Health and Safety Plan). The Emergency Response Plan shall include procedures for fire and medical emergencies and for failure of containment barriers.

9. Fall Protection Plan: This plan can be part of the Health and Safety Plan and shall summarize the fall protection program that will be utilized throughout all dismantling, cleaning, packaging and loading of components.

1.6 CONTRACT CLOSEOUT SUBMITTALS:

A. The Contractor shall submit the following submittals to the consultant at completion of work:

1. Copy of Contractor entry/exit logs

2. Waste disposal documentation, e.g., bills of lading, manifests, disposal tickets

3. Laboratory sample analytical results

4. Contractor's Decommissioning Final Status Report

1.7 QUALITY ASSURANCE

A. Decommissioning Work Plan: As part of project submittals, the Contractor shall prepare and submit a detailed Decommissioning Work Plan.

B. The Decommissioning Work Plan shall include, but not be limited to,

1. Building areas and systems to be decommissioned

2. Work procedures

3. Preliminary project schedule

4. Types of equipment

5. Description of decontamination procedures

6. Products used

7. Crew size

8. Number and location of negative air machines and exhaust discharge points

9. Emergency procedures for fire and medical emergencies and for failure of containment barriers.

PART 2 - PRODUCTS AND PROCEDURES

2.1 EMERGENCY PLANNING

A. The Contractor shall prepare an Emergency Response Plan detailing at least the information required in this section and in any applicable Federal, State or local regulations.

B. Details of Plan

1. Emergency planning shall be developed prior to abatement initiation and submitted to the Owner for review under the requirements of Section 1.5 of this specification to the Owner.

2. Emergency procedures shall be in written form and prominently posted in the clean change area of the worker decontamination area. Everyone, prior to entering the work area, must read and sign these procedures to acknowledge receipt, review and understanding of work site layout, location of emergency exits and emergency procedures.

3. Emergency planning shall include written notification of police, fire and emergency medical personnel of planned abatement activities, work schedule and layout of work area, particularly barriers which may impact response activities.

4. Emergency planning shall include considerations of fire, power failure, explosion, toxic atmospheres, electrical hazards, slips, trips and falls, confined spaces, spills or releases of hazardous materials and heat related injury. Written procedures shall be developed and employee training in procedures shall be provided.

5. Employees shall be trained in evacuation procedures in the event of work place emergencies.

a. For Non-life-threatening Situations: Employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers, if necessary, before exiting the work place to obtain proper medical treatment.

b. For Life-threatening Injury or Illness: Worker decontamination shall take least priority. After measures to stabilize the injured worker, he/she shall be removed from the work place and secure proper medical treatment.

6. Telephone numbers of all emergency response personnel shall be prominently posted in the clean area and equipment room, along with the location of the nearest telephone.

2.2 TOOLS AND EQUIPMENT

A. All equipment shall at least conform to minimum industry standards:

1. Negative Air Machines: Negative pressure machines shall use a centrifugal type fan. HEPA filters shall be closed on all edges with a ridge frame, filters shall be 99.97% effective down to 0.3 microns; two stage pre-filtration is required. Instrumentation shall include manometer, magnehelic gauge and safety warning devices.

2. Vacuum Cleaners: Vacuum cleaning equipment shall be fitted with HEPA filtration capable of filtering work area at 99.97% efficiency down to 0.3 microns before exhausting to the outside air.

2.3 MATERIALS

B. Remediation Materials:

1. Poly sheeting for all applications shall be 6-mil nominal thickness and flame retardant.

2. Tape shall be suitable for joining poly seams and attaching poly sheeting to surfaces.

3. Scrapers, scrubbers and hand tools including but not limited to: various size containers, plastic liners, plastic drop cloths, tape, boot covers, gloves, containers (20-30 gallons), decontamination solution, rinse water, 2-3 long-handled, soft-bristled scrub brushes, mop heads, basin or bucket, soap, towels and bench or stools.

2.4 PERSONNEL PROTECTION

A. When components are handled or dust will be generated in the hot zone, PPE shall include: disposable coveralls, e.g., DuPont Tychem SL Coveralls, with Hoods and Taped Seams, equal Tyvek® or similar coveralls, tear resistant nitrile gloves, safety

eyewear and mercury vapor and combination P100 filter, as applicable, full-face mask respirator or PAPR.

B. Additional safety equipment (e.g., hard hats meeting the requirements of ANSI Standard Z89.1-1981, eye protection meeting the requirements of ANSI Standard Z87.1-1979, safety shoes meeting the requirements of ANSI Standard Z41.1- 1967, disposable nitrile gloves or other work gloves shall be provided to all workers and authorized visitors.

C. Nonskid footwear shall be provided to all abatement workers. Disposable clothing shall be adequately sealed to the footwear to prevent body contamination.

D. Gloves should be changed often throughout the work day to prevent degradation and skin contact with potentially contaminated surfaces.

E. Nitrile gloves shall be worn under leather, fabric or metal mesh gloves used to prevent cuts from sharp metal ducting and other sharp edges.

2.5 TRAINING

A. Supervisors and Workers shall have successfully completed training in project specific hazard communication and OSHA 40 hour Hazwoper. Documentation/certification of completed training shall be provided. This training shall be conducted by a Certified Industrial Hygienist or other professional knowledgeable in the potential hazards and safe removal of laboratory equipment and components and include, at a minimum, the following:

1. Potential risks, diseases and health effects

2. Engineering and administrative controls

3. Safe work practices, including removal, cleaning, disinfecting and drying methods

4. PPE usage, including respirator training and fit testing

5. Safe work practices for waste packaging, handling and disposal

6. Specification requirements

2.6 RESPIRATORY PROTECTION

A. All respiratory protection shall be provided to workers in accordance with the submitted written Respiratory Protection Plan, which shall include all items in OSHA 29 CFR 1910.134 (B), (D), (E) and (F). This program shall be posted in the support zone.

B. Workers shall be provided with personally issued, individually identified (marked with waterproof designations) respirators.

C. At minimum, half-face air purifying respirators utilizing P-100 filters shall be worn during all preparation and cleaning operations. During all removal operations, the minimum level of respiratory protection required shall be the full-face air-purifying respirator. Powered air-purifying respirators (PAPR) are also allowable.

D. Pre-removal wipe testing shall be conducted to determine the contaminants and the proper respiratory filters and PPE required.

E. Fit Testing

1. Workers must perform positive and negative air pressure fit checks each time a respirator is put on, whenever the respirator design so permits. Powered air-purifying respirators shall be tested for adequate flow as specified by the manufacturer.

2. Workers shall be given a qualitative fit test in accordance with procedures detailed in the OSHA Regulation (29 CFR 1910.134) for all respirators to be used on this abatement project. The irritant smoke protocol will be utilized. An appropriately administered qua

3. ntitative fit test may be substituted for the qualitative fit test.

F. No one wearing a beard or other facial hair which will reduce the performance of the respirator shall be permitted to don a respirator and enter the work area.

G. Respirator cartridges shall be replaced with new cartridges each time the worker exits the work area. Used cartridges shall be disposed of as contaminated waste. A sufficient supply of cartridges shall be maintained on site at all times.

2.7 MEDICAL SURVEILLANCE:

A. Employees shall be evaluated by a physician to determine their capability to work safely while breathing through the added resistance of a respirator. The employer shall maintain these records and provide them as demanded by OSHA or other such compliance entity.

PART 3 - EXECUTION

3.1 GENERAL

A. Secure entire work area to prevent entry of unprotected/unauthorized persons.

B. Cover, isolate and seal work area doors, windows, skylights, lighting fixtures, duct openings and all other openings into work area. Use polyethylene sheeting and seal edges with polyethylene adhesive tape, duct tape, restoration tape or other waterproof tape.

C. Establish emergency and fire exits from the work area as part of the written Emergency Response Plan.

D. Locate at the project site the log sheet sign-in for all persons entering the work area from the beginning to the completion of the final clearance of the abatement project.

3.2 PREPARATION - WORK AREAS

A. Utilities: The Contractor shall be responsible to provide utilities to the work area. Connection to existing building utilities and services will require written approval of the Owner. All internal building utility connections will be in compliance with NEC, state and local building codes.

1. Electric Power: The Contractor shall shut down and lock out electric power to all work areas. The Contractor shall provide temporary power and lighting, and ensure safe installation of temporary power sources and equipment used where high humidity a

2. nd/or water shall be sprayed in accordance with all applicable codes. All power to work areas shall be brought in through a ground-fault interrupter at the source.

B. Movable Objects: Movable objects within the work area shall be pre-cleaned using HEPA filtered vacuum equipment and/or wet cleaning and such objects shall be removed from the work area to an uncontaminated location.

C. Fixed Objects: Fixed objects and other items which are to remain within the work area shall be pre-cleaned using HEPA filtered vacuum equipment and/or wet cleaning. Such objects and items shall be enclosed with two layers of 6-mil plastic sheeting (minimum) and sealed with tape.

D. Pre-cleaning: The work area shall be cleaned using HEPA filtered vacuum equipment and/or wet cleaning. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters are prohibited. Components shall not be disturbed during pre-cleaning.

E. Isolation Barriers - General: Isolation barriers that seal off all openings, including but not limited to windows, doorways, skylights, ducts, grilles, diffusers and any other penetrations of the area shall be constructed using a minimum of one layer of a minimum of 6-mil flame retardant polyethylene plastic sheeting sealed with tape. Also, all seams in the system components that pass through the work area shall be sealed. Doorways which shall not be used for passage during work shall also be sealed.

F. Exits: Emergency and fire exits from the work area shall be maintained or alternate exits shall be established according to all applicable codes.

G. Toilet Facilities: Adequate toilet facilities shall be readily accessible to all employees.

H. A single chamber airlock shall be constructed at the entrance to each work area. The airlock shall be constructed of rigid framing and covered in 6-mil flame retardant polyethylene sheeting. A triple sheet, curtained doorway shall be constructed at either end of the airlock. The airlock shall be sized as appropriate to accommodate cleaning, bagging, wrapping, decontamination and other abatement activities.

3.3 HYGIENE PRACTICES

A. Eating, drinking, smoking, chewing gum or tobacco and applying of cosmetics are not allowed in the work area.

B. Personal protective equipment (PPE) shall be worn throughout removal and cleanup procedures to protect against potential chemical residue exposure hazards, sharp metal edges and skin and respiratory irritation from the use of cleaners.

C. The Contractor shall provide a personnel decontamination system enclosure at the site. The facility may be remote from the remediation areas. The location of the remote decontamination facility shall be coordinated with the Owner and Owner's Representative.

1. Provide a minimum of three totally enclosed chambers, lined with minimum of two layers of 6-mil thick fire retardant polyethylene sheeting. The floors shall be lined with reinforced 6-mil polyethylene sheeting.

2. Provide an equipment area for storage of equipment (tools, boots, etc.) to be reused in the abatement work and for removal of disposable clothing. The equipment area shall have two curtained airlocks, one leading to the work area and one leading to the shower area. A minimum of 6 feet shall be maintained between airlocks.

3. Provide a shower area containing at least one shower for every six employees with hot and cold water supply controllable at the tap and with waste drainage piped through filters that meet applicable Federal, State and local rules, laws and regulations. The Contractor is responsible for providing hot water to employees

4. Provide a changing area with suitable lockers or other storage acceptable to the Owner for storage of each worker's or authorized visitor's street clothing, towels, clean disposable clothing for use in work area and other non-contaminated items. Provide a curtained airlock, from the changing area leading to the shower area.

3.4 NEGATIVE AIR PRESSURE SYSTEM - WORK AREAS:

A. The Contractor shall provide sufficient number of spare HEPA filtration units to maintain a minimum of four air changes per hour in case of unit failure. At least one back-up unit must be provided.

B. Negative pressure machines: shall use centrifugal type fan: HEPA filters shall be closed on all edges with a ridge frame, filters shall be 99.97% effective down to 0.3 microns; two stage pre-filtration is required. Instrumentation shall include manometer, magnahelic gauge and safety warning devices.

3.5 PRESSURE DIFFERENTIAL METER

A. A manometer(s) capable of reading <-0.02" water column ("wc") or equivalent shall be used to document work areas are maintained under negative pressure.

B. Site Supervisor and Owner's Representative will document during ventilation component removal work days that manometer readings are below <-0.02"wc". Readings shall be documented at the first opportunity during the shift and again at the end of the shift.

C. To calculate total air flow requirement:

$$\text{TOTAL } FT^3/MIN = \frac{\text{VOLUME OF WORK AREA (IN } FT^3)}{\text{MINUTES}}$$

D. To calculate the number of units needed for the abatement:

$$\text{NUMBER OF UNITS NEEDED} = \frac{\text{TOTAL } FT^3/MIN}{\text{CAPACITY OF UNIT IN } FT^3/MIN}$$

E. Filters shall be changed as dictated by the job conditions. Used filters shall be disposed of with other wastes generated during the work. A sufficient supply of new and unused filters shall be maintained at all times.

F. Air shall flow in through the airlock at the entrance to the work area and exit through the negative air filtration unit by means of a flexible duct leading outside the building.

G. Negative pressure units shall be started before removal work begins and are to be in continuous operation until the area and equipment are ready for final surface wipe sampling.

H. Do not shut off units at the end of the work shift.

3.6 PROHIBITED ACTIVITIES

A. Any activity that results in excessive or unnecessary moisture in or outside of the work area

B. Dry removal or dry sweeping

C. Use of compressed air for cleaning

D. Use of high-speed power tools not equipped with an HEPA-filtered local exhaust system

E. Use of tools that can damage building surfaces, such as coarse wire brushes

F. Hot work, e.g., grinding or torch burning, is not to be performed. It is expected that fume hood, ductwork, paint booth components and louvers can be dismantled or cold cut with metal snips or shears.

3.7 ESTABLISH REMEDIATION AREAS:

A. All workers shall have access to soap and water for decontamination purposes.

B. Airlocks constructed of 6-mil flame retardant polyethylene sheeting shall be established at work area entrances and exits. A minimum of one airlock emergency exit shall be established for each work area. Airlocks are to not extend into corridors.

C. Workers shall establish a “hot zone” around the work area. Only those workers wearing personal protective equipment (PPE) as specified in Part 2; Paragraph 2.4 will be allowed in the hot zone during abatement.

1. The hot zone will be considered all areas within the affected rooms where components are being removed.

D. Before the hot zone is established, a “warm zone” or decontamination reduction area will be set up adjacent to the hot zone. Here workers, equipment and components will be decontaminated in three stages. Stage 1 will be a dirty area, Stage 2 will be a wash area and Stage 3 will be a clean area.

1. The warm zone will be considered any area just outside of any remediation work area.

E. The Contractor will minimally designate and develop a cleaning station within each warm zone.

1. The cleaning stations shall consist of two layers of 6-mil flame retardant polyethylene sheeting on the floor designed to contain the deposits/residues and any spilled wash water.

2. A shallow plastic basin or pan shall be used to place the disassembled components for subsequent scraping and scrubbing.

3. In addition, a plastic leak proof basin or pan shall be placed next in series on top of the plastic and will contain CitroClean solution or other appropriate cleaning solution.

4. Three containers shall be placed adjacent to the cleaning station.

a. The first container shall contain a cleaning solution to be used to scrub and wash the interior of components. The cleaning solution can be sprayed into the fume hoods and ducts and removed in accordance with the manufacture’s recommendations.

b. The second container shall contain wash water with (e.g., Alconox) to be used to scrub and wash the workers gloves after they complete cleaning and prior to doffing their personal protective equipment (PPE).

c. The third container shall contain clean tap water. This water shall be used to rinse the workers as they exit the work area. All used cleaning equipment shall be containerized for disposal.

d. A “support zone” shall be established outside the warm zone for supplies and materials staging.

F. Critical barriers shall be installed over all openings to the work areas, including windows and doors, consisting of at least one layer of 6-mil, flame retardant polyethylene sheeting and sealed with duct tape.

G. HEPA filtered negative air pressure equipment shall be installed in the work areas, exhausting to the exterior of the building, to create a 24 hour negative pressure enclosure at all work areas. A minimum of four air changes per hour shall be maintained until project completion. It is expected that t

H. wo standard 2000 cfm negative air machines plus one machine on standby as a back-up is expected to be sufficient to establish the negative air required in each room.

I. Prior to ventilation component removal, the Contractor is to document negative pressure equipment calculations and manometer readings and provide to the Owner’s Representative.

J. Critical barriers shall be installed over all openings to the work areas, including windows and doors, consisting of at least one layer of 6-mil, flame retardant polyethylene sheeting and sealed with duct tape.

K. HEPA filtered negative air pressure equipment shall be installed in the work areas, exhausting to the exterior of the building, to create a 24 hour negative pressure enclosure at all work areas. A minimum of four air changes per hour shall be maintained until project completion. It is expected that t

L. wo standard 2000 cfm negative air machines plus one machine on standby as a back-up is expected to be sufficient to establish the negative air required in each room.

M. Prior to ventilation component removal, the Contractor is to document negative pressure equipment calculations and manometer readings and provide to the Owner’s Representative.

3.8 REMOVAL AND CLEANING

A. When components are handled or dust will be generated in the hot zone, PPE shall be worn as specified in Part 2; Paragraph 2.4. Do not contact skin or inhale the dust from the interior surfaces of the ventilation system components.

B. Ductwork dismantling and inspection shall include the entire exhaust duct systems from the termination point to the fan.

C. The Contractor shall establish a fall protection program to prevent falls on the job during dismantling, cleaning packaging and loading in accordance with OSHA 29 CFR 1926.502. Adherence to fall protection regulations will be required throughout the

project. The Contractor shall furnish a copy of their Fall Protection Plan prior to starting work.

D. Hot work, e.g., grinding or torch burning, is not to be performed. It is expected that ventilation hoods, ductwork, and exhaust fan components can be dismantle

E. d or cold cut with metal snips or shears.

F. Workers in the hot zone shall plasticize the area around and under the ventilation components where any debris, residue or spills may occur during removal operations.

G. Carefully remove ventilation components and wrap loosely in polyethylene sheeting and move them to a central location “warm zone” for cleaning.

H. The Contractor shall pick up all loose, dislodged deposits and residues lost during the dismantlement operations.

I. Deposits shall be swept and transferred to the appropriate storage containers.

J. Cleaning of components shall include manually scraping with steel putty knifes and/or scrubbing with plastic bristle brushes to remove all visible deposits and then pushing and pulling a damp mop-head with detergent through the ventilation hood, exhaust fan components and the ductwork to decontaminate. The Owner’s Representative and Contractor Supervisor will visually inspect the cleaned ducts and verify deposits and residues are removed.

K. A neutral cleaning detergent and water shall be used to clean the components. The components will require physical removal, disassembly and cleaning to complete the removal and collection of deposits found within the interior of the component system networks.

L. The Contractor shall collect the removed deposits and all wash water generated in 55 gallon drums.

M. Wash water and debris from decontamination stations shall be disposed of in accordance with Federal, state and local requirements.

N. All PPE and poly that may be contaminated shall be segregated and disposed of separately from the bulk contaminated waste in accordance with Federal, state and local requirements.

3.9 FINAL CLEANING OF REMEDIATION AREAS

A. The Contractor shall be responsible for cleaning and repairing any leakage and environmental damage that is caused.

B. Upon completion of component removal and decontamination, the entire remediation area shall be cleaned utilizing HEPA vacuum cleaners followed by wet wiping with disposable wash rags and/or brushes using CitroClean solution.

C. The Owner's Representative and Contractor Supervisor shall conduct a visual inspection at the completion of cleaning to verify the completeness of the cleaning.

D. Upon completion of a satisfactory inspection, the critical barriers shall be removed. The areas behind the critical barriers shall be cleaned utilizing HEPA vacuum cleaners followed by wet wiping with disposable wash rags using CitroClean solution.

E. The cleaning station shall be broken down. All wash water shall be collected in 55-gallon drums in a secure waste storage area. The Contractor shall inspect the secure waste storage area daily and results of the inspection noted in the Contractor Supervisor's daily log.

F. Waste streams shall be sampled and then analyzed by a NYSDOH ELAP accredited laboratory for hazardous waste characteristics, profiled for disposal and disposed of in accordance with 40 CFR Part 260 regulations and hazardous waste management regulations in 6 NYCRR Part 370 series.

3.10 CLEARANCE CRITERIA

A. Visual Inspection:

1. After final cleaning is complete and the area is dry, the Owner's Representative shall perform a complete visual inspection of the ventilation hoods, associated sheet metal exhaust ductwork, associated exhaust fans, acid waste glass piping, associated traps and sump basins as well as the entire immediate work area under conditions of adequate lighting, which shall be provided by the Contractor. The Contractor's Supervisor shall accompany the Owner's Representative on the final visual inspection. Inspection shall include: all interior surfaces, decontamination area, all plastic sheeting, seals over ventilation openings, doorways, windows and other openings. If any debris, residue, dust or other matter is found, the final cleaning procedure shall be repeated until all materials are removed. When the area is visually clean, both the Owner's Representative

and the Contractor's Representative shall complete the certification at the end of this section for each work area.

B. Certificate of Visual Inspection

1. Following this section is a "Certificate of Visual Inspection". This certification is to be completed by the Contractor and certified by the Owner's Representative for each work area. Submit completed Certificate with Application for Final Payment. Final payment will not be made until this Certification is executed.

3.11 WASTE DISPOSAL AND EQUIPMENT LOAD-OUT

A. Packaging Waste:

1. All waste, including removed components, debris, containment poly, critical barrier materials, suits, respirator filters, vacuum HEPA filters, water filters and other potentially contaminated items shall be properly packaged for disposal.

2. Use 6-mil plastic bags with 'goose-neck' seal, or other impermeable containers. Wrap large or irregular items in 6-mil poly sheeting and seal with tape.

3. Sharp, jagged or other items that may puncture poly shall be packaged in rigid impermeable containers such as drums or boxes, or wrapped in burlap or other protective covering before sealing in bags or poly sheeting.

B. Removing Items From Work Area:

1. Packaged waste shall be HEPA-vacuumed before removing from the work area.

2. Storage of packaged waste shall be in a dumpster or other suitable container that can be secured.

C. Shipment of Items From Project:

1. Decontaminated wastes and debris may be disposed as solid waste when sampling shows it is not regulated as hazardous waste.

2. Decontaminated tools and equipment may be shipped by normal carrier to warehouse, another job site or other destination.

D. Packaged wastes shall be sampled and analyzed by the Contractor for hazardous waste characteristics and properly disposed of only in landfills approved and permitted by the New York State Department of Environmental Conservation for accepting appropriately characterized solid waste or hazardous wastes.

E. If waste is deemed Hazardous Waste through testing all wastes shall be disposed at an approved Hazardous Waste Disposal Facility.

CERTIFICATION OF VISUAL INSPECTION

In accordance with this Section, "Laboratory Equipment Decontamination and Removal", the Contractor hereby certifies that he has visually inspected ventilation hoods, associated sheet metal exhaust ductwork, associated exhaust fans, acid waste glass piping, associated traps and sump basins, as well as the work area (all applicable surfaces including pipes, beams, ledges, walls, ceiling floor, decontamination area, sheet plastic, etc.) and has found no evidence of dust, debris or residue.

By: (Signature) _____ Date: _____

(Print Name): _____

(Print Title): _____

OWNER'S REPRESENTATIVE CERTIFICATION

I hereby certify that I have accompanied the Contractor on the Contractor's visual inspection and verify this inspection has been thorough and to the best of my knowledge and belief, the Contractor's Certification above is a true and honest one.

By: (Signature) _____ Date: _____

(Print Name): _____

(Print Title): _____

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Concrete masonry units.
2. Mortar and grout materials.
3. Reinforcement.
4. Miscellaneous masonry accessories.

B. Products Installed, but Not Furnished, under This Section:

1. Steel lintels and steel shelf angles in accordance with Section 055000 "Metal Fabrications" in concrete unit masonry.

1.2 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

1.3 ACTION SUBMITTALS

A. Product Data:

1. For each type of product.

B. Shop Drawings: For the following:

1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls.
3. Lintel design and types required.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Material Certificates: For each type and size of the following:

1. Masonry units.

a. Include data on material properties.

2. Cementitious materials. Include name of manufacturer, brand name, and type.
3. Mortar admixtures.

4. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
5. Grout mixes. Include description of type and proportions of ingredients.
6. Reinforcing bars.
7. Joint reinforcement.
8. Anchors, ties, and metal accessories.

C. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test in accordance with ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
2. Include test reports, in accordance with ASTM C1019, for grout mixes required to comply with compressive strength requirement.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified in accordance with ASTM C1093 for testing indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units 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. If units become wet, do not install until they are dry.

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.

D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.7 FIELD CONDITIONS

A. Protection of Masonry: Cover partially completed masonry when construction is not in progress.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

2.2 CONCRETE UNIT MASONRY, GENERAL

A. Masonry Standard: Comply with TMS 402/602 except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.

C. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.

1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
2. Provide square-edged units for outside corners unless otherwise indicated.

D. Concrete Building Brick: ASTM C55.

1. Density Classification: Normal weight.

E. Fire-Resistance Ratings: Where indicated, provide units that comply with requirements for fire-resistance ratings indicated as determined by testing in accordance with ASTM E119, by equivalent masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

2.3 CONCRETE MASONRY UNITS

A. Standard CMUs: Load-bearing ASTM C90.

1. Density Classification: Normal weight.
2. Size (Width): Manufactured to dimensions 3/8 inch less-than-nominal dimensions.

2.4 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

1. Alkali content is not more than 0.1 percent when tested in accordance with ASTM C114.

B. Hydrated Lime: ASTM C207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

D. Aggregate for Mortar: ASTM C144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.

E. Aggregate for Grout: ASTM C404.

F. Water: Potable.

2.5 REINFORCEMENT

A. Masonry-Joint Reinforcement, General: Ladder type complying with ASTM A951/A951M.

1. Interior Walls: Hot-dip galvanized carbon steel.
2. Wire Size for Side Rods: 0.187-inch diameter.
3. Wire Size for Cross Rods: 0.187-inch diameter.
4. Spacing of Cross Rods: Not more than 16 inches o.c.

5. Provide in lengths of not less than 10 ft., with prefabricated corner and tee units.

2.6 TIES AND ANCHORS

A. General: Ties and anchors extend at least 1-1/2 inches into masonry but with at least a 5/8-inch cover on outside face.

B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:

1. Stainless Steel Wire: ASTM A580/A580M, Type 304.

C. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Connector Section: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.062-inch- thick, stainless steel sheet.
2. Tie Section: Triangular-shaped wire tie made from 0.187-inch- diameter, stainless steel wire. Mill-galvanized wire may be used at interior walls unless otherwise indicated.

D. Partition Top Anchors: 0.105-inch- thick metal plate with a 3/8-inch- diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from stainless steel.

E. Rigid Anchors: Fabricate from steel bars 1-1/2 inches wide by 1/4 inch thick by 24 inches long, with ends turned up 2 inches or with cross pins unless otherwise indicated.

1. Corrosion Protection: Epoxy coating 0.020 inch thick.

2.7 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.

B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D226/D226M, Type I (No. 15 asphalt felt).

2.8 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.
2. Use portland cement-lime mortar unless otherwise indicated.

B. Mortar for Unit Masonry: Comply with ASTM C270, Property Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.

1. For reinforced masonry, use Type S.
2. For interior non-load-bearing partitions, Type O may be used instead of Type N.

C. Grout for Unit Masonry: Comply with ASTM C476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 402/602 for dimensions of grout spaces and pour height.
2. Proportion grout in accordance with ASTM C476, Table 1.
3. Provide grout with a slump of 8 to 11 inches as measured in accordance with ASTM C143/C143M.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
2. Verify that foundations are within tolerances specified.
3. Verify that reinforcing dowels are properly placed.
4. Verify that substrates are free of substances that would impair mortar bond.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.

B. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

C. Where existing masonry occurs, match coursing, bonding, color, and texture of existing masonry.

3.3 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 ft., or 1/2 inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 ft., 1/4 inch in 20 ft., or 1/2 inch maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 ft., 3/8 inch in 20 ft., or 1/2 inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 ft., 1/4 inch in 20 ft., or 1/2 inch maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 ft., 3/8 inch in 20 ft., or 1/2 inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 ft. or 1/2 inch maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.

3.4 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

C. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

D. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.

E. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.

1. Install compressible filler in joint between top of partition and underside of structure above.
2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c. unless otherwise indicated.
3. Wedge non-load-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078443 "Joint Firestopping."
5. Joint Sealants: Comply with ASTM C1193 for use of joint sealants, including acoustic sealants as applicable to materials, applications and Project conditions.
6. Penetration Firestopping: Install penetration firestopping systems for Project applications to comply with manufacturer's written installation instructions.

3.5 MORTAR BEDDING AND JOINTING

A. Lay solid CMUs with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

B. Where applicable, set masonry trim units in full bed of mortar with full vertical joints. Fill dowel, anchor, and similar holes.

1. Clean soiled surfaces with fiber brush and soap powder and rinse thoroughly with clear water.
2. Wet joint surfaces thoroughly before applying mortar.
3. Rake out mortar joints for pointing with sealant.

C. Rake out mortar joints at pre-faced CMUs to a uniform depth of 1/4 inch and point with epoxy mortar to comply with epoxy-mortar manufacturer's written instructions.

D. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

3.6 MASONRY-JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.

1. Space reinforcement not more than 16 inches o.c.
2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.

B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.

C. Provide continuity at corners by using prefabricated L-shaped units.

D. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.7 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

A. Anchor masonry to structural steel and concrete, where masonry abuts or faces structural steel or concrete, to comply with the following:

1. Provide an open space not less than 1/2 inch wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
2. Anchor masonry with anchors embedded in masonry joints and attached to structure.

3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

3.8 CONTROL JOINTS

A. General: Install control joint materials in CMUs as masonry progresses. Do not allow materials to span control joints without provision to allow for in-plane wall or partition movement.

B. Locate control joints. Comply with NCMA TEK 10-02D.

C. Form control joints in CMUs as follows:

1. Install preformed control joint gaskets designed to fit standard sash block.

3.9 REINFORCED UNIT MASONRY

A. Placing Reinforcement: Comply with requirements in TMS 402/602.

B. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

1. Comply with requirements in TMS 402/602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
2. Limit height of vertical grout pours to not more than 60 inches.

3.10 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements is done at Contractor's expense.

B. Fire-Resistance Rated Construction: Where applicable, inspect fire-rated CMU construction to determine compliance with construction documents per building code compliance.

3.11 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

C. In-Progress Cleaning: Clean unit masonry as Work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.

3.12 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

END OF SECTION 042200

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood-preservative-treated lumber.
2. Fire-retardant-treated lumber.
3. Plywood backing panels.

1.2 DEFINITIONS

A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.

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 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: 19 percent unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1, Use categories as follows:

1. UC2: Interior construction not in contact with ground but may be subject to moisture. Include all rough carpentry.

    a. Wood sills, sleepers, blocking, furring, and similar concealed members in contact with masonry or concrete.

2. UC3A (Commodity Specification A): Coated sawn products in exterior construction not in contact with ground but exposed to all weather cycles including intermittent wetting. Include all rough carpentry.

    a. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.

3. UC3A (All Other Commodity Specifications): Coated products excluding sawn products in exterior construction not in contact with ground, exposed to all weather cycles but protected from liquid water. Include all rough carpentry.

a. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.

4. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
5. After treatment, redry boards 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.

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, and similar concealed members in contact with masonry or concrete.

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 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.

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.

E. Application: Treat all rough carpentry unless otherwise indicated.

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.

B. Roofing Nailers: Structural- or No. 2-grade lumber or better; kiln-dried Douglas fir, southern pine, or wood having similar decay-resistant properties.

C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

D. 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 PLYWOOD BACKING PANELS

A. Equipment Backing Panels: Plywood, DOC PS 1, Exterior, A-C, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

2.6 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 fastenersof 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 AC308 as appropriate for the substrate.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Set work to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

C. 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.

D. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

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. 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.

H. 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.

I. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

J. 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).

K. 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 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.

3.3 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

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Penetration firestopping systems.

1. Penetration firestopping systems in fire-resistance-rated walls.
2. Penetration firestopping systems in horizontal assemblies.
3. Exposed 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.

D. Sustainable Design Submittals:

1. Product Data: For sealants, indicating VOC content.

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 single manufacturer.

2.2 PENETRATION FIRESTOPPING SYSTEMS

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. 3M Building and Construction
2. Hilti, Inc.
3. Tremco Incorporated

B. 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."

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.

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.

F. 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 ratings required. 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. Cast-in-Place Firestopping Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer sleeve lined with an intumescent strip, a flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.

B. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.

C. Firestopping Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.

D. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced intumescent elastomeric sheet bonded to galvanized-steel sheet.

E. Intumescent Putties: Nonhardening, water-resistant, intumescent putties containing no solvents or inorganic fibers.

F. Intumescent Wrap Strips: Single-component intumescent elastomeric strips for use around combustible penetrants.

G. 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.

H. Pillows/Bags: Compressible, removable, and reusable intumescent pillows encased in fire-retardant polyester or glass-fiber cloth. Where exposed, and when required by a listed system, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed or dislodged.

I. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

J. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants.

K. Fire-Rated Cable Sleeve Kits: Complete kits designed for new or existing cable penetrations through walls which accept standard accessories.

L. 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.

M. 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.

N. Wall-Opening Protective Materials: Intumescent, non-curing putty pads or self-adhesive inserts for protection of electrical switch and receptacle boxes.

O. Fire-Rated HVAC Retaining Angles: Steel angle system with integral intumescent firestopping gasket for use around rectangular steel HVAC ducts without fire dampers.

P. Firestopping Plugs: Flexible, re-enterable, intumescent, foam-rubber plug for use in blank round openings and cable sleeves.

Q. 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 in diameter.

R. 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.

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.

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: Permanently label walls containing penetration firestopping systems with the words "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS," using lettering not less than 3 inches high and with minimum 0.375-inch strokes.

1. Locate in accessible concealed floor, floor-ceiling, or attic space at 15 ft. from end of wall and at intervals not exceeding 30 ft..

B. Penetration Identification: Identify each penetration firestopping system with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of penetration firestopping system edge so labels are visible to anyone seeking to remove penetrating items or firestopping systems. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:

1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.
3. Designation of applicable testing and inspecting agency.
4. Date of installation.
5. Manufacturer's name.
6. Installer's name.

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

A. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory" under product Category XHEZ. Retain one alpha-alpha option followed by either a four-digit number or range of four-digit numbers for each system in schedule.

B. Firestopping for Metallic Pipes, Conduit, or Tubing:

1. UL-Classified Systems: C-BJ-1001-1063, F-B-1001-1017, W-J-1001-1217, W-L-1001-1449.

C. Firestopping for Nonmetallic Pipe, Conduit, or Tubing:

1. UL-Classified Systems: C-BJ-2001-2035, F-B-2001-2042, W-J-2001-2230, W-L-1002-2540.

D. Firestopping for Electrical Cables:

1. UL-Classified Systems: C-BJ-3001-3030, F-B-3001-3017, W-J-3001-3177, W-L-3001-3348.

E. Firestopping for Cable Trays with Electric Cables:

1. UL-Classified Systems: C-BJ-4001-4036, F-B-4001-4006, W-J-4001-4071, W-L-4001-4077.

F. Firestopping for Insulated Pipes:

1. UL-Classified Systems: C-BJ-5001-5020, F-B-5001-5020, W-J-5001-5144, W-L-5001-5284.

G. Firestopping for Miscellaneous Electrical Penetrants:

1. UL-Classified Systems: C-BJ-6001, W-J-6001-6006, W-L-6001-6020.

H. Firestopping for Miscellaneous Mechanical Penetrants:

1. UL-Classified Systems: C-BJ-7001-7108, F-B-7001-7005, W-J-7001-7110, W-L-7001-7188.

I. Firestopping for Groupings of Penetrants:

3.8 UL-Classified Systems: C-BJ-8001-8024, F-B-8001-8007, W-J-8001-8046, W-L-8001-8084.

END OF SECTION 078413

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Intumescent gypsum wall framing gaskets.
2. 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 092216 "Non-Structural Metal Framing" for firestop tracks for metal-framed partition heads.

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. Product Schedule: For each joint firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing agency.

1. 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 or been evaluated by UL and found to comply with UL's "UL Solutions Qualified Firestop Contractor Program."

1.7 FIELD 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."

2.3 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. Intumescent Gypsum Wall Framing Gaskets: Applied to steel tracks, runners, and studs prior to framing installation. Provide products with fire, smoke, and acoustical ratings that allow movement of up to 100 percent compression and/or extension when tested in accordance with UL 2079 or ASTM E1966; have an L Rating of less than 1 cfm/ft. when tested in accordance with UL 2079; and a minimum Sound Transmission Class (STC) rating of 56 when tested in accordance with ASTM E90 or ASTM C919.

C. 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. 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. 3M Building and Construction
    b. Hilti, Inc.
    c. Nelson; Emerson Electric Co., Automation Solutions
    d. Tremco Incorporated

2. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the wall, floor, or roof in or between which it is installed.

D. Exposed Joint Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined in accordance with ASTM E84.

1. Sealant 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."

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. Joint Identification: Identify joint firestopping systems with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of joint edge, so labels are visible to anyone seeking to remove joint firestopping system. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:

1. The words "Warning - Joint Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.
3. Designation of applicable testing agency.
4. Date of installation.
5. Manufacturer's name.
6. Installer's name.

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 JOINT FIRESTOPPING SYSTEM SCHEDULE

A. Where UL-classified systems are indicated, they refer to system numbers in UL's online directory "Product iQ" under product Category XHBN.

B. Wall-to-Wall, Joint Firestopping Systems: .

1. UL-Classified Systems: WW-D S-0000-0999.

C. Head-of-Wall, Fire-Resistive Joint Firestopping Systems:

1. UL-Classified Systems: HW-D-0000-0999 1000-1999.

D. Bottom-of-Wall, Joint Firestopping Systems:

1. UL-Classified Systems: BW-S-0000-0999.

END OF SECTION 078443

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Mildew-resistant joint sealants.
3. Latex joint sealants.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Silicone joint sealants.
2. Mildew-resistant joint sealants.
3. Latex joint sealants.

B. Samples for Initial Selection: Manufacturer's standard color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

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.

1.3 INFORMATIONAL SUBMITTALS

A. Field Quality-Control Reports: For field-adhesion-test reports, for each sealant application tested.

B. Sample warranties.

1.4 CLOSEOUT SUBMITTALS

A. Manufacturers' special warranties.

B. Installer's special warranties.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Authorized representative who is trained and approved by manufacturer.

B. Testing Agency Qualifications: Qualified in accordance with 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.
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 SOURCE LIMITATIONS

A. Obtain joint sealants from single manufacturer for each sealant type.

2.2 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.

2.3 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.

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. Sika Corporation - Building Components
b. Dow Corning Corporation
c. Pecora Corporation
d. Tremco Incorporated

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. 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. Pecora Corporation
b. Sika Corporation - Building Components

c. The Dow Chemical Company
d. Tremco Incorporated

2.5 LATEX JOINT SEALANTS

A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.

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. Pecora Corporation
b. Tremco Incorporated
c. BASF Building Systems

2.6 JOINT-SEALANT BACKING

A. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

B. 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.

2.7 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.

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. Glass.

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.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: 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 10 tests for the first 1000 ft. of joint length for each kind of sealant and joint substrate.
2) 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.

C. Prepare test and inspection reports.

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

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior standard steel doors and frames.

B. Related Requirements:

1. Section 087100 "Door Hardware" for door hardware for hollow-metal doors.
2. Division 26 "Electrical" for electrified door hardware.

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 ACTION SUBMITTALS

A. Product Data:

1. Interior standard steel doors and frames.

B. Product Data Submittals: For each product.

1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, and finishes.

C. 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.

D. 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.

1.5 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each type of fire-rated hollow-metal door and frame assembly fire-rated borrowed-lite assembly for tests performed by a qualified testing agency indicating compliance with performance requirements.

1.6 CLOSEOUT SUBMITTALS

A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.7 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 nonvented plastic.

1. Provide additional protection to prevent damage to factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. 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 HOLLOW METAL DOORS AND FRAMES

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. Ceco Door; AADG, Inc.; ASSA ABLOY
2. Pioneer Industries; AADG, Inc.; ASSA ABLOY
3. Republic Doors and Frames; a Allegion brand
4. Steelcraft; Allegion plc

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated on Drawings, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.

1. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing in accordance with UL 1784 and installed in compliance with NFPA 105.

B. Fire-Rated, Borrowed-Lite Assemblies: Assemblies complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing in accordance with NFPA 257 or UL 9.

2.3 INTERIOR STANDARD 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.
c. Face: Uncoated steel sheet, minimum thickness of 0.053 inch.
d. Edge Construction: Model 1, Full Flush Model 2, Seamless.
e. Core: Manufacturer's standard Kraft-paper honeycomb Polystyrene Polyurethane Polyisocyanurate Vertical steel stiffener.
f. Fire-Rated Core: Manufacturer's standard vertical steel stiffener core for fire-rated doors.

2. Frames:

a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch.
b. Sidelite and Transom Frames: Fabricated from same thickness material as adjacent door frame.
c. Construction: Full profile welded.

3. Exposed Finish: Prime.

2.4 BORROWED LITES

A. Fabricate of uncoated steel sheet, minimum thickness of 0.053 inch.

B. Construction: Full profile welded.

C. Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as metal as frames.

D. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

2.5 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 of frame height above 7 feet.
3. Postinstalled Expansion Anchor: Minimum 3/8-inch- 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 height adjustment. Terminate bottom of frames at top of underlayment.

D. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z 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.

2.6 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."

2.7 FABRICATION

A. Door Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

B. 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. Sidelite and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by welding.
2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
3. 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.

C. 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.

D. 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 beveled stops unless otherwise indicated.
2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
3. 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.
4. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
5. 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.

2.8 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. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.

B. Drill and tap doors and frames to receive nontemplated, 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. Fire-Rated Openings: Install frames in accordance with NFPA 80.
3. Floor Anchors: Secure with postinstalled expansion anchors.
4. Solidly pack mineral-fiber insulation inside frames.
5. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.
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. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8.
2. Fire-Rated Doors: Install doors with clearances in accordance with NFPA 80.
3. Smoke-Control Doors: Install doors in accordance with NFPA 105.

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. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 081113

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes commercial door hardware for the following:

1. Swinging doors.
2. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical door hardware.
3. Cylinders specified for doors in other sections.

C. Related Sections:

1. Division 08 Section “Hollow Metal Doors and Frames”.

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. UL/ULC and CSA C22.2 - Standards for Automatic Door Operators Used on Fire and Smoke Barrier Doors and Systems of Doors.
8. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
3. ANSI/UL 294 - Access Control System Units.
4. UL 305 - Panic Hardware.
5. ANSI/UL 437- Key Locks.

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing, fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:

    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware.
    g. Door and frame sizes and materials.
    h. Warranty information for each product.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

    a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
    b. Complete (risers, point-to-point) access control system block wiring diagrams.

c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

E. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

1.4 CLOSEOUT SUBMITTALS

A. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

B. Project Record Documents: Provide record documentation of as-built door hardware sets in digital format (.pdf, .docx, .xlsx, .csv) and as required in Division 01, Project Record Documents.

1.5 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

F. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.

G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.

5. Review the required inspecting, testing, commissioning, and demonstration procedures

I. At completion of installation, provide written documentation that components were applied according to manufacturer's instructions and recommendations and according to approved schedule.

1.6 DELIVERY, STORAGE AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.7 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.8 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.

2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Warranty Period: Unless otherwise indicated, warranty shall be one year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 BUTT HINGES

A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:

   a. Two Hinges: For doors with heights up to 60 inches.
   b. Three Hinges: For doors with heights 61 to 90 inches.
   c. Four Hinges: For doors with heights 91 to 120 inches.
   d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

   a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
   b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

   a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
   b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following:

   a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for all out-swinging lockable doors.

5. Manufacturers:

   a. McKinney (MK) - TA/T4A Series, 5-knuckle.
   b. dormakaba BEST (ST) - F/FBB Series, 5-knuckle.

2.2 CONTINUOUS HINGES

A. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 continuous geared hinge. with minimum 0.120-inch thick extruded 6063-T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Manufacturers:.

    a. Hager Companies (HA).
    b. Pemko (PE).
    c. dormakaba BEST (ST).

2.3 POWER TRANSFER DEVICES

A. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Manufacturers:

    a. Securitron (SU) - EL-CEPT Series.
    b. No Substitution.

2.4 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:

1. Threaded mortise cylinders with rings and cams to suit hardware application.
2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
4. Tubular deadlocks and other auxiliary locks.
5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
6. Keyway: Match Facility Standard.

C. Small Format Interchangeable Cores: Provide small format interchangeable cores (SFIC) as specified, core insert, removable by use of a special key; usable with other manufacturers' cylinders.

D. Keying System: Each type of lock and cylinders to be factory keyed.

1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. Existing System: Field verify and key cylinders to match Owner's existing system.

E. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).

F. Construction Keying: Provide temporary keyed construction cores.

G. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

2.5 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.6 ELECTRIC STRIKES

A. Standard Electric Strikes: Electric strikes conforming to ANSI/BHMA A156.31, Grade 1, for use on non-rated or fire rated openings. Strikes shall be of stainless steel construction tested to a minimum of 1500 pounds of static strength and 70 foot-pounds of dynamic strength with a minimum endurance of 1 million operating cycles. Provide strikes with 12 or 24 VDC capability, fail-secure unless otherwise specified. Where specified provide latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike.

1. Manufacturers:

    a. HES (HS) - 1006 Series.
    b. No Substitution.

B. Provide electric strikes with in-line power controller and surge suppressor by the same manufacturer as the strike with the combined products having a five year warranty.

2.7 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. Exit devices shall have a five-year warranty.
2. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
3. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.
4. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
5. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.

    a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
    b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed exit devices. Listed manufacturers shall meet all functions and features as specified herein.

1. Manufacturers:

a. dormakaba BEST (PR) - Apex 2000 Series.
b. No Substitution.

2.8 SURFACE DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Large Body Cast Iron): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.

1. Manufacturers:

a. LCN Closers (LC) - 4040XP Series.
b. No Substitution.

2.9 ELECTROMECHANICAL DOOR OPERATORS

A. Electromechanical Door Operators (High Traffic): Provide ANSI/BHMA A156.19 Certified Products Directory (CPD) listed low energy operators that are UL325/991 and UL10C certified and comply with requirements for the Americans with Disabilities Act (ADA). Operators shall accommodate openings up to 250 pounds and 48" wide.

1. Provide operators with features as follows:

a. Non-handed with push and pull side mounting.
b. Activation by push button, hands-free or radio frequency devices.
c. Adjustable opening force and closing power.
d. Two-year limited warranty.
e. Wi-Fi interface where the operator is a secure, password protected WiFi hot spot with no connection to building's IT required.
   1) Simple setup with no app required.
   2) View status and make adjustments without removing the cover.
   3) Built-in logic to support single use restroom applications with no external relay boards, logic modules, position switches required.
f. Mounting backplate to simplify and speed up installation.
g. Integration with access control systems.

2. Operators shall have the following functionality:

a. Adjustable Hold Open: Amount of time a door will stay in the full open position after an activation.
b. Blow Open for Smoke Ventilation: Door opens when signal is received from alarm system allowing air or smoke to flow through opening. Door will stay open until signal from alarm system is stopped.
c. Emergency Interface Relay: Door closes and ignores any activation input until signal is discontinued.
d. Infinite Hold Open: Door will hold open at set position until power is turned off.
e. Latch Assist: At closed position, after an activation, the door is pulled in. After the door has closed, the door is pulled in to assist with latch release/engagement.

f. Obstruction Detection: Door closes if it hits an obstruction while opening; door will reverse to open position if it hits an obstruction while closing. Door will stop once it hits an obstruction and will rest against the obstruction until removed.
g. Open Delay: Delays operator opening for locking hardware.
h. Outside Wall Switch Disable: When contact is closed, outside wall switch is disabled.
i. Power Assist: Senses the door is being opened manually and applies small amount of power to assist the user in opening the door with force less than 5 lbs. The door opens only as far as it is moved manually, then closes once released.
j. Power Close: Additional force to assist door closing between 7° and 2°.
k. Presence Detector Input: Input for external sensor to detect presence at door open or close position only.
l. Push & Go: As the door is manually opened, the operator "senses" movement and opens door to the full-open position.
m. Selector Mode Switch: Off disables the signal inputs unless Blow Open is activated, on activates the signal inputs, hold open activates the unit (unless Blow Closed is activated) to the hold open position.
n. Vestibule Delay: When the wall switch is pressed, first door in vestibule will open. Second door will open once vestibule door delay has expired. Delay is adjustable.
o. Executive Mode Feature: When the door receives an activation signal it opens and remains open until either a second signal is received, or the door is manually moved in closing direction.

3. Manufacturers:

a. Norton Rixson (NO) - 6300 Series.
b. No Substitution.

2.10 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1” LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16” above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer’s catalog and template book for specific requirements for size and applications.

4. Protection Plates: ANSI/BHMA A156.6 protection plates (kick, armor, or mop), fabricated from the following:

    a. Stainless Steel: 300 grade, 050-inch thick.

5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:

    a. Hager Companies (HA).
    b. Rockwood (RO).
    c. Trimco (TC).

2.11 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

    a. Hager Companies (HA).
    b. Rockwood (RO).
    c. Trimco (TC).

C. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

1. Manufacturers:

    a. Norton Rixson (RF).
    b. Rockwood (RO).
    c. Sargent Manufacturing (SA).

2.12 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Manufacturers:

1. National Guard Products (NG).
2. Pemko (PE).
3. Reese Enterprises, Inc. (RE).

2.13 ELECTRONIC ACCESSORIES

A. Touchless Switches: FCC certified microwave sensing switch used for REX or activation of various access control devices in place of a traditional wired switch. Unit to have an adjustable sensing zone from 4” to 24”. At exterior locations furnish foam gaskets and weather covers. Provide single gang or double gang unit as specified in the hardware sets.

1. Manufacturers:

a. Alarm Controls (AK) - NTS Series.
b. No Substitution.

2.14 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.15 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. DHI TDH-007-20: Installation Guide for Doors and Hardware.

3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and 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 specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Push Plates and Door Pulls: When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.

E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

F. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection (Punch Report): Reference Division 01 Sections “Closeout Procedures”. Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.

1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

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.

3.6 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.
2. The supplier is responsible for handing and sizing all products.
3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

Hardware Sets

Set: 1.0

Doors: 910, 911, 912

4	Hinge, Full Mortise, Hvy Wt	BB1168 4-1/2" x 4-1/2"	US26D	HA
1	Storeroom Lock	9K37D 15D	626	BE
1	Electric Strike	1006CS	630	HS
1	Surface Closer	4040XP .RWPA	.689	LC
1	Kick Plate	K1050 10” x 2” LDW	US32D-316	RO
1	Wall Stop	406	US32D	RO
1	Gasketing	S77BL		PE
1	Power Supply	AQD1		SU

Notes: Card reader by others
Operation Description
Door normally closed and locked
Presenting a valid credential to card reader shall energize electric strike allowing door to be pushed open.
Door will relock in 5 seconds
Key override at all times
In the event of a fire or power failure door will remain secure
Free egress

Set: 1.1

Doors: 909

4	Hinge, Full Mortise, Hvy Wt	BB1168 NRP 4-1/2" x 4-1/2"	US26D	HA
1	Storeroom Lock	9K37D 15D	626	BE
1	Electric Strike	1006CS	630	HS
1	Surface Closer	4040XP .RWPA	.689	LC
1	Kick Plate	K1050 10” x 2” LDW	US32D-316	RO
1	Wall Stop	406	US32D	RO
1	Gasketing	S77BL		PE
1	Power Supply	AQD1		SU

Notes: Card reader by others
Operation Description
Door normally closed and locked
Presenting a valid credential to card reader shall energize electric strike allowing door to be pulled open.
Door will relock in 5 seconds
Key override at all times
In the event of a fire or power failure door will remain secure
Free egress

Set: 2.0

Doors: 901.1, 901.2, 901A, 914A, 914C, 920A, 920C

3	Hinge, Full Mortise, Hvy Wt	BB1168 4-1/2" x 4-1/2"	US26D	HA
1	Intruder Lock	9K37IN 15D	626	BE
1	Surface Closer	4040XP .RWPA	.689	LC
1	Kick Plate	K1050 10” x 2” LDW	US32D-316	RO
1	Wall Stop	406	US32D	RO

1 Gasketing	S77BL		PE

Set: 3.0

Doors: 914, 920

2 Continuous Hinge	CFM_HD1 PT		PE
2 Electric Power Transfer	EL-CEPT	630	SU
2 Surface Vert Rod Exit	FL 2208 V4908A	630	PR
2 Rim Cylinder	12E-72	626	BE
1 Surface Closer	4040XP .RWPA	.689	LC
1 Automatic Opener	6341	689	NO
2 Kick Plate	K1050 10" x 1" LDW	US32D-316	RO
2 Wall Stop	406	US32D	RO
1 Astragal	S771BL		PE
1 Gasketing	S77BL		PE
2 Latch Retraction Kit	LR100PDK		SD
2 Sensor	NTS-1		AK
1 Power Supply	AQD2-1R		SU

Notes: Notes: Card Reader by others
Doors normally closed and locked
Presenting valid credential to card reader shall activate wave to open actuator and retract push rails on exit devices.
While exterior actuator is active waving hand in front of actuator will start opening cycle.
Inside actuator always active. Waving hand in front of actuator will retract push rail and start opening cycle on RHR door Leaf
Key override at all times
In the event of a power failure or fire alarm door will remain secure.
Free egress

Set: 4.0

Doors: 914B, 920B

3 Hinge, Full Mortise, Hvy Wt	BB1168 NRP 4-1/2" x 4-1/2"	US26D	HA
1 Storeroom Lock	9K37D 15D	626	BE
1 Surf Overhead Stop	9-336	630	RF
1 Surface Closer	4040XP .RWPA	.689	LC
1 Kick Plate	K1050 10" x 2" LDW	US32D-316	RO
1 Gasketing	S77BL 18'		PE

Set: 5.0

Doors: 915

3	Hinge, Full Mortise, Hvy Wt	BB1168 NRP 5" x 4-1/2"	US26D	HA
1	Intruder Lock	9K37IN 15D	626	BE
1	Surface Closer	4040XP .RWPA	.689	LC
1	Kick Plate	K1050 10" x 2" LDW	US32D-316	RO
1	Wall Stop	406	US32D	RO
1	Gasketing	2891APK		PE
1	Door Bottom	420APKL 48"		PE
1	Threshold	272A		PE

Set: 6.0

Doors: 903 (Alternate No. 1)

3	Hinge, Full Mortise, Hvy Wt	BB1168 NRP 5" x 4-1/2"	US26D	HA
1	Intruder Lock	9K37IN 15D	626	BE
1	Surface Closer	4040XP .RWPA	.689	LC
1	Kick Plate	K1050 10" x 2" LDW	US32D-316	RO
1	Wall Stop	406	US32D	RO
1	Gasketing	2891APK		PE
1	Door Bottom	420APKL 48"		PE
1	Threshold	272A		PE

END OF SECTION 087100

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fire-resistance-rated glazing.

1.2 DEFINITIONS

A. Fire-Resistance-Rated Glazing: Glazing that prevents spread of fire and smoke and radiant heat and complies with requirements for rated walls and rated openings; capable of blocking radiant heat

B. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

C. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.

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.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Glass Samples: For each type of glass product; 12 inches square.

C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of glass and glazing product.

B. Sample Warranties: For special warranties.

1.6 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.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install fire-resistant glazing until spaces are enclosed and weathertight and temporary HVAC system is operating and maintaining ambient temperature conditions at occupancy levels during remainder of construction period.

1.8 WARRANTY

A. Manufacturer's Special Warranty for Tempered Glazing Units with Clear Intumescent Interlayer: Manufacturer agrees to replace units that deteriorate within specified warranty period. Deterioration of tempered glazing units with clear intumenscent interlayer is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning glass contrary to manufacturer's written instructions. Evidence of failure is air bubbles within units, or obstruction of vision by contamination or deterioration of intumescent interlayer.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Glass: For each glass type, obtain from single source from single manufacturer.

B. Glazing Accessories: For each product and installation method, obtain from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and impact loads (where applicable) without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation; deterioration of glazing materials; or other defects in construction.

2.3 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organization below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.

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. Label shall indicate manufacturer's name, type of glass, glass thickness, and safety glazing standard with which glass complies.

2.4 GLASS PRODUCTS

A. Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class I (clear) unless otherwise 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.

2.5 FIRE-RESISTANCE-RATED GLAZING

A. General: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-resistance ratings indicated, based on testing in accordance with ASTM E119 or UL 263.

B. Fire-Resistance-Rated Glazing Labeling: Permanently mark fire-resistance-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, test standard, that glazing is approved for use in walls, and fire-resistance rating in minutes.

C. Fire-Resistance-Rated Framing and Doors: Fire-resistance-rated glazing with 60-, 90-, and 120-minute ratings requires framing and doors from glass supplier, tested as an assembly complying with ASTM E119 or UL 263.

D. Fire-Resistance-Rated Tempered Glazing Units with Clear Intumescent Interlayer: Glazing units made from two or more lites of uncoated, fully tempered, clear float glass; with perimeter edge seal enclosing a cavity filled with optically clear intumescent polymer; complying with 16 CFR 1201, Category II.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Technical Glass Products; Pilkington Pyrostop or comparable product. Available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following

a. SAFTI FIRST Fire Rated Glazing Solutions
b. Schott

2.6 GLAZING ACCESSORIES

A. Provide glazing gaskets, glazing sealants, glazing tapes, setting blocks, spacers, edge blocks, and other glazing accessories that are compatible with glazing products and each other and are approved by testing agencies that listed and labeled fire-resistant glazing products with which products are used for applications and fire-protection

ratings indicated.

B. Glazing Sealants for Fire-Rated Glazing Products: Neutral-curing silicone glazing sealant complying with ASTM C920, Type S, Grade NS, Class 50, Use NT. Comply with sealant and glass manufacturer's written instructions for selecting glazing sealants suitable for applications indicated.

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. GE Construction Sealant; Momentive Performance Materials Inc.
b. The Dow Chemical Company
c. Tremco Incorporated

C. 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 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

D. 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. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.7 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. Perimeter Insulation for Fire-Resistance-Rated Glazing: Product that is approved by testing agency that listed and labeled fire-resistant glazing product with which it is used for application and fire-protection rating indicated.

2.8 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.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with manufacturing and installation tolerances, including those for size, squareness, and offsets at corners, and for compliance with minimum required face and edge clearances.

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 fire side and protected side. Label or mark units as needed so that fire side and protected side are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

A. Use methods approved by testing agencies that listed and labeled fire-resistant glazing products.

B. 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.

C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

E. 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.

F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

G. Provide spacers for glass lites where length plus width is larger than 50 inches.

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- 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.

H. 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.

I. Set glass lites with proper orientation so that coatings face fire side or protected side 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 and then to jambs. Cover horizontal framing joints by applying tapes to jambs and 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.

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.

D. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 CLEANING AND PROTECTION

A. Immediately after installation, remove nonpermanent labels and clean surfaces.

B. 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.

1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer.

C. Remove and replace glass that is damaged during construction period.

D. 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.

END OF SECTION 088813

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Nonstructural steel framing.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Product Certificates: For code-compliance certification of studs and track.

B. Evaluation Reports: From ICC-ES showing compliance with Project requirements, for the following:

1. Studs and track.
2. Firestop track.
3. Post-installed anchors.

1.4 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.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: Where indicated on Drawings, provide assemblies incorporating nonstructural steel framing identical to those of assemblies tested for fire resistance in accordance with ASTM E119 by an independent testing agency.

2.2 NONSTRUCTURAL STEEL FRAMING

A. Framing Members, General: Comply with requirements in AISI S220 for conditions indicated on Drawings.

1. Protective Coating: ASTM A653/A653M, G40 or coating with demonstrated equivalent corrosion resistance. Galvannealed products are unacceptable.

a. Equivalent Corrosion-Resistant Coating: Evaluation report acceptable to authorities having jurisdiction demonstrates corrosion resistance equivalent to specified protective coating.

B. Studs and Track: Conventional members, roll-formed into standard shapes without surface deformations to stiffen framing members.

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. ClarkDietrich
b. MBA Building Supplies

2. Minimum Base-Steel Thickness: 0.0312 inch (use of equivalent thickness is not acceptable).
3. Depth: As indicated on Drawings.

C. Slip-Type Head Joints: Where indicated on Drawings, provide the following:

1. Slotted Deflection Track: Steel sheet top track manufactured with 2-1/2-inch- deep flanges that allow positive attachment to studs through long slots and prevent deflection of structure above from cracking finishes applied to framing; in base-steel thickness not less than that of studs and in width to accommodate depth of studs.

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) ClarkDietrich
2) MBA Building Supplies

D. Firestop Track: Top track manufactured to allow partition heads to expand and contract with movement of structure above while maintaining continuity of fire-resistance-rated assembly indicated on Drawings; in base-steel thickness not less than that of studs and in width to accommodate depth of studs.

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. ClarkDietrich
b. Fire Trak Corp
c. Metal-Lite
d. Blazeframe Industries; Intumescent Framing, Fire Stop System

E. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated on Drawings.

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. ClarkDietrich

2. Minimum Base-Steel Thickness: As indicated on Drawings

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. Adjustable Wall-Furring Brackets for Tie Wire: Use minimum double strand of 0.0625-inch- diameter wire, or triple strand of 0.0475-inch- diameter wire to attach furring channels.
2. Suspended-Ceiling Systems:

a. Splicing Carrying Channels and Furring Members: Use double loops of minimum 0.0625-inch- diameter wire.
b. Saddle Tying Main Runners and Cross Furring: Use minimum 0.0625-inch-diameter wire, or double strand of 0.0475-inch- diameter wire.

C. Post-Installed Anchors: Fastener systems with an evaluation report, acceptable to authorities having jurisdiction, based on ICC-ES AC58 or AC308 as appropriate for the substrate.

1. Securing Hangers:

a. Type: screw 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.

D. Power-Actuated Anchors: not permitted into existing concrete tee structure.

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 INSTALLATION OF NONSTRUCTURAL METAL FRAMING, GENERAL

A. Installation Standard: ASTM C754.

1. 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.

3.3 INSTALLATION OF NONSTRUCTURAL STEEL FRAMING

A. Install framing system components at spacings indicated on Drawings, but not greater than spacings required by referenced installation standards for assembly types.

1. Single-Layer Application: 16 inches o.c. unless otherwise indicated on Drawings.

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. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated on Drawings and support closures to make partitions continuous from floor to underside of solid structure.

    a. Firestop Track: Install to maintain continuity of fire-resistance-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 o.c.

F. 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.

END OF SECTION 092216

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior gypsum board.

B. Related Requirements:

1. Section 092216 "Non-Structural Metal Framing" for nonstructural steel framing and suspension systems that support gypsum board panels.

1.2 ACTION SUBMITTALS

A. 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 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.

1.4 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. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings in accordance with ASTM E119; 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. Abuse-Resistant Gypsum Board: ASTM C1396/C1396M, tested in accordance with ASTM C1629/C1629M.

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. Georgia-Pacific Gypsum LLC
b. Gold Bond Building Products, LLC provided by National Gypsum Company
c. USG Corporation

2. Core: 5/8 inch, Type X.
3. Surface Abrasion: ASTM C1629/C1629M, meets or exceeds Level 3 requirements.
4. Indentation: ASTM C1629/C1629M, meets or exceeds Level 3 requirements.
5. Soft-Body Impact: ASTM C1629/C1629M, meets or exceeds Level 3 requirements.
6. Mold Resistance: ASTM D3273, score of 10 as rated in accordance with ASTM D3274.
7. Long Edges: Tapered.

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C1047.

1. Material: Galvanized-steel sheet or aluminum-coated steel sheet or rolled zinc.
2. Shapes:

    a. Cornerbead.
    b. LC-Bead: J-shaped; exposed long flange receives joint compound.
    c. 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, rounded or beveled panel edges, 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 compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.

2.7 AUXILIARY MATERIALS

A. Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.

B. Laminating Adhesive: Adhesive or joint compound recommended in writing by manufacturer for directly adhering gypsum panels to continuous substrate.

C. 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 thick.

D. Sound-Attenuation Blankets: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers as follows:

1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

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 panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

C. 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.

D. Form control and expansion joints with space between edges of adjoining gypsum panels.

E. 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. 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- wide joints to install sealant.

F. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch- 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.

G. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

H. 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.

I. 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. Abuse-Resistant Gypsum Board: As indicated on Drawings.

B. Single-Layer Application:

1. On partitions/walls, apply gypsum panels [vertically (parallel to framing)][horizontally (perpendicular 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.
b. At stairwells and other high walls, install panels horizontally unless otherwise indicated on Drawings or required by fire-resistance-rated assembly.

2. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written instructions and temporarily brace or fasten gypsum panels until fastening adhesive has set.

3.4 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[, rounded or beveled edges,] 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 levels indicated below and in accordance with ASTM C840:

1. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.

a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

3.5 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

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Acoustical panels.
2. Metal suspension system.
3. Metal edge moldings and trim.

1.2 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- square Samples of each type, color, pattern, and texture.
2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch- long Samples of each type, finish, and color.

1.3 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.
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.

B. Qualification Data: For testing agency.

C. Product Test Reports: For each acoustical panel ceiling, for tests performed by a qualified testing agency.

D. Evaluation Reports: For each acoustical panel ceiling suspension system and anchor and fastener type, from ICC-ES.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.5 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 2 percent of quantity installed.
2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.

1.6 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.

1.7 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 SOURCE LIMITATIONS

A. Source Limitations for Ceiling System: 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 of applicable testing agency.

1. Flame-Spread Index: Class A in accordance with ASTM E1264.
2. Smoke-Developed Index: 50 or less.

2.3 ACOUSTICAL PANELS

A. Acoustical Panels (APC-1 and APC-2):

1. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong World Industries; Ultima or comparable product by one of the following:

   a. Rockfon; ROCKWOOL International
   b. USG Corporation
   c. Or approved equal

2. 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.
3. Classification: Provide panels as follows:

   a. Type and Form: Type A Form A2.2, Wet-formed mineral fiber with acoustically transparent membrane.
   b. Pattern: E (lightly textured).

4. Item Number:

   a. APC-1: 1915.
   b. APC-2: 1912.

5. Color: White.
6. Light Reflectance (LR): Not less than 0.88.
7. Ceiling Attenuation Class (CAC): Not less than 35.
8. Noise Reduction Coefficient (NRC): Not less than 0.75.
9. Edge/Joint Detail: Beveled tegular.
10. Thickness: 3/4 inch.
11. Modular Size:

a. APC-1: 24 by 24 inches.
b. APC-2: 24 by 24 inches.

12. 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. Exposed Metal Suspension System:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong World Industries; Suprafine XL 9/16” or comparable product by one of the following:

   a. Rockfon; ROCKWOOL International
   b. USG Corporation
   c. Or approved equal

2. 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.
3. Narrow-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation; with prefinished 9/16-inch-wide metal caps on flanges.

   a. Structural Classification: Heavy-duty system.
   b. End Condition of Cross Runners: Override (stepped) type.
   c. Face Design: Flat, flush.
   d. Cap Material: Cold-rolled steel.
   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.

1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing in accordance with ASTM E488/E488M or ASTM E1512 as applicable, conducted by a qualified testing and inspecting agency.

    a. Corrosion Protection, Carbon Steel: Components zinc plated in accordance with ASTM B633, Class SC 1 (mild) service condition.

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. 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- diameter wire.

C. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

D. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.

E. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch- thick, galvanized-steel sheet complying with ASTM A653/A653M, G90 coating designation; with bolted connections and 5/16-inch- diameter bolts.

2.6 METAL EDGE MOLDINGS AND TRIM

A. Metal Edge Moldings and Trim:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong World Industries or comparable product by one of the following:

    a. Rockfon; ROCKWOOL International
    b. USG Corporation
    c. Or approved equal

2. 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.

    a. Edge moldings to fit acoustical panel edge details and suspension systems indicated and match width and configuration of exposed runners unless otherwise indicated.
    b. 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.

c. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

2.7 ACOUSTICAL SEALANT

A. Acoustical Sealant: As specified in Section 079219 "Acoustical Joint Sealants."

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 INSTALLATION OF ACOUSTICAL PANEL CEILINGS

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. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
7. 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.
8. Do not attach hangers to steel deck tabs.
9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.

D. 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 o.c. and not more than 3 inches from ends. Miter corners accurately and connect securely.
3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

F. 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. 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. Protect lighting fixtures and air ducts in accordance with requirements indicated for fire-resistance-rated assembly.

3.4 ERECTION TOLERANCES

A. Suspended Ceilings: Install main and cross runners level to a tolerance of 1/8 inch in 12 feet, 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, non-cumulative.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Acoustical panel ceiling hangers, anchors, and fasteners will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

3.6 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 095113

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Thermoplastic-rubber base.
2. Vinyl molding accessories.

1.2 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 long.

C. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

1.3 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 for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.4 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 or more than 90 deg F.

1.5 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, 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 or more than 95 deg F.

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 THERMOPLASTIC-RUBBER BASE (RB-1)

A. Basis-of-Design Product: Subject to compliance with requirements, provide Johnsonite; a Tarkett Company, Duracove or comparable product by one of the following:

1. Roppe Corporation; Roppe Holding Company
2. Nora by Interface
3. Or approved equal.

B. Product Standard: ASTM F1861, Type TP (rubber, thermoplastic).

1. Group: I (solid).
2. Style and Location:

    a. Style B, Cove.

C. Thickness: 0.125 inch.

D. Height: 4 inches.

E. Lengths: Coils in manufacturer's standard length.

F. Outside Corners: Job formed.

G. Inside Corners: Job formed.

H. Colors: As indicated on Drawings.

2.2 TRANSITION MOLDING ACCESSORY (TR-3)

A. Basis-of-Design Product: Subject to compliance with requirements, provide Futura Transitions or comparable product by one of the following:

1. Flexco Corporation
2. Roppe Corporation; Roppe Holding Company
3. Tarkett USA.

B. Description: Transition strips.

C. Profile and Dimensions: Carpet tile to LVT; 3mm to Carpet Tile “B”.

D. Locations: Provide molding accessories in areas indicated.

E. Colors and Patterns: As indicated on Drawings.

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. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

C. 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.

D. 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. Job-Formed Corners:

1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches 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 3 inches 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.
2. Damp-mop horizontal surfaces to remove marks and soil.

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

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid vinyl floor tile.
2. Vinyl composition floor tile.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For each type of resilient floor tile.

1. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
2. Show details of special patterns.

C. Samples for Verification: Full-size units of each color and pattern of floor tile required.

D. Product Schedule: For floor tile. Use same designations indicated on Drawings.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.5 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 for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.6 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..
2. Engage an installer and provide list of five (5) recent installations, minimum, who has performed installations of similar size, complexity and material type.
3. Installer(s) whose qualifications are submitted shall be the one(s) performing work on site.

1.7 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 or more than 90 deg F. Store floor tiles on flat surfaces.

1.8 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, 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 or more than 95 deg F.

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 SOLID VINYL FLOOR TILE (LVT-1)

A. Basis-of-Design Product: Subject to compliance with requirements, provide Teknoflor; T3 LVT, Textiles Collection or comparable product by one of the following:

1. Armstrong Flooring, Inc.
2. Mannington Commercial
3. Shaw Industries Group, Inc.; Berkshire Hathaway Company

B. Tile Standard: ASTM F1700.

1. Class: Class III, Printed Film Vinyl Tile.
2. Type: B, Embossed Surface.

C. Style: Textiles TX3504

D. Thickness: 1/8 inch (3mm)

E. Wear Layer Thickness: 23 mil.

F. Size: 18 by 18 inches.

G. Colors and Patterns: As indicated on Drawings.

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.

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., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
b. 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 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.

Lay tiles square with room axis.

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.

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. Floor Polish: Remove soil, adhesive, and blemishes from floor tile surfaces before applying liquid floor polish.

1. Apply three coat(s).

E. Cover floor tile until Substantial Completion.

END OF SECTION 096519

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Resinous flooring.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include manufacturer's technical data, installation instructions, and recommendations for each resinous flooring component required.

B. Samples for Verification: For each resinous flooring system required and for each color and texture specified, 6 inches square, applied to a rigid backing by Installer for this Project.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Material Test Reports: For each resinous flooring system, by a qualified testing agency.

C. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For resinous flooring to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.
2. Engage an installer and provide list of five (5) recent installations, minimum, who has performed installations of similar size, complexity and material type.
3. Installer(s) whose qualifications are submitted shall be the one(s) performing work on site.

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. Apply full-thickness mockups on 48-inch- square floor area selected by Architect.

    a. Include 48-inch length of integral cove base with inside and outside corner.

2. Simulate finished lighting conditions for Architect's review of mockups.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

C. Warranty: Provide sample warranty letter with the following terms.

1. Manufacturer shall furnish a single, written warranty covering both material and workmanship for a period of (1) full year from date of installation or provide a joint warranty signed on a single document by material manufacturer and applicator jointly warranting the materials and workmanship for a period of (1) full year from date of installation.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring installation.

B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring installation.

C. Close spaces to traffic during resinous flooring installation and for 24 hours after installation unless manufacturer recommends a longer period.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Flammability: Self-extinguishing in accordance with ASTM D635.

2.2 RESINOUS FLOORING

A. Resinous Flooring System: Abrasion-, impact-, and chemical-resistant, aggregate-filled, resin-based monolithic floor surfacing designed to produce a seamless floor and integral cove base.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Stonhard, Inc.; Stontec QBF or comparable product by one of the following:

a. Crossfield Products Corp
b. Dur-A-Flex; a Sherwin Williams Company
c. Key Resin Company
d. Or approved equal

B. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, from single source from single manufacturer. Obtain secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from manufacturer recommended in writing by manufacturer of primary materials.

C. System Characteristics:

1. Color and Pattern: As indicated on Drawings.
2. Wearing Surface: Clear UV resistant, epoxy sealer.
3. Overall System Thickness: 1/16 inch.

D. System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested in accordance with test methods indicated:

1. Abrasion Resistance: 0.52 gm maximum weight loss in accordance with ASTM D4060.
2. Critical Radiant Flux: 0.45 W/sq. cm or greater in accordance with NFPA 253.

E. System Chemical Resistance: Test specimens of cured resinous flooring system are unaffected when tested in accordance with ASTM C267 for immersion in the following reagents for no fewer than seven days:

1. Hydrochloric Acid.
2. Nitric Acid.
3. Sulfuric Acid.
4. Sodium Hydroxide.
5. Acetone.
6. Alcohol (Ethyl, Propyl, Isopropyl).
7. Chloroform.
8. Methyl Ethyl Ketone.
9. Xylene.

F. Body Coats:

1. Products:

a. Stonhard, Inc; Stonproof ME7.

2. Resin: Urethane.
3. Formulation Description: 100 percent high solids.
4. Type: Pigmented.
5. Installation Method: Self-leveling slurry with broadcast aggregates.
6. Number of Coats: One.
7. Aggregates: Vinyl flakes.

G. Broadcast Aggregate:

1. Type: Multi-color vinyl flakes broadcast, 1/16-inch size. To match owner's sample.
2. Number of Broadcasts: To refusal.

H. Topcoats: Sealing or finish coats.

1. Products:

a. Stonhard, Inc.; Stonkote CE4.

2. Resin: Epoxy.
3. Formulation Description: 100 percent high solids.
4. Type: Clear.
5. Number of Coats: Two.
6. Finish: Standard.

2.3 INSTALLATION MATERIALS

A. Metal Edge Strips: Extruded aluminum, of height required to protect exposed edges of flooring, and in maximum available lengths to minimize running joints.

B. Profiles:

1. TR-1; Manhattan Strip Company, Extruded.
2. TR-2; Schluter, Reno-Ramp K.

C. Finish: As selected by Architect from manufacturer's full range.

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 resinous flooring systems.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare and clean substrates in accordance with resinous flooring manufacturer's written instructions for substrate indicated to ensure adhesion.

B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.

1. Roughen concrete substrates as follows:

   a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
   b. Comply with requirements in SSPC-SP 13/NACE No. 6, with a Concrete Surface Profile of 3 or greater in accordance with ICRI Technical Guideline No. 310.2R, unless manufacturer's written instructions are more stringent.

2. Repair damaged and deteriorated concrete in accordance with resinous flooring manufacturer's written instructions.
3. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft., 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 85 percent relative humidity level measurement.

4. Alkalinity and Adhesion Testing: Perform tests recommended in writing by resinous flooring manufacturer. Proceed with installation only after substrate alkalinity is not less than 6 or more than 8 pH unless otherwise recommended in writing by flooring manufacturer,

C. Patching and Filling: Use patching and fill material to fill holes and depressions in substrates in accordance with manufacturer's written instructions.

1. Control Joint Treatment: Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring in accordance with manufacturer's written instructions.

D. Resinous Materials: Mix components and prepare materials in accordance with resinous flooring manufacturer's written instructions.

3.3 INSTALLATION

A. Apply components of resinous flooring system in accordance with manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness specified.

1. Coordinate installation of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
2. Cure resinous flooring components in accordance with manufacturer's written instructions. Prevent contamination during installation and curing processes.
3. Expansion and Isolation Joint Treatment: At substrate expansion and isolation joints, comply with resinous flooring manufacturer's written instructions.

B. Primer: Apply primer over prepared substrate at spreading rate recommended in writing by manufacturer.

C. Field-Formed Integral Cove Base: Apply cove base mix to wall surfaces before applying flooring coats. Apply in accordance with manufacturer's written instructions and details, including those for taping, mixing, priming, troweling, sanding, and topcoating of cove base. Round internal and external corners.

1. Integral Cove Base: 4 inches high.

D. Self-Leveling Body Coats: Apply self-leveling slurry body coats in thickness specified for flooring system.

1. Aggregates: Broadcast aggregates at rate recommended in writing by manufacturer. After resin is cured, remove excess aggregates to provide surface texture indicated.

E. Topcoats: Apply topcoats in number indicated for flooring system specified, at spreading rates recommended in writing by manufacturer, and to produce wearing surface specified.

3.4 FIELD QUALITY CONTROL

A. Material Sampling: Owner may, at any time and any number of times during resinous flooring installation, require material samples for testing for compliance with requirements.

1. Owner will engage an independent testing agency to take samples of materials being used. Material samples will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will test samples for compliance with requirements, using applicable referenced testing procedures or, if not referenced, using testing procedures listed in manufacturer's product data.
3. If test results show applied materials do not comply with specified requirements, pay for testing, remove noncomplying materials, prepare surfaces coated with unacceptable materials, and reinstall flooring materials to comply with requirements.

3.5 PROTECTION

A. Protect resinous flooring from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.

END OF SECTION 096723

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Carpet tile.

B. Related Requirements:

1. Section 024119 "Selective Demolition" for removing existing floor coverings.
2. Section 096513 "Resilient Base and Accessories for resilient wall base and accessories installed with carpet tile.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
2. Include manufacturer's written installation recommendations for each type of substrate.

B. Shop Drawings: For carpet tile installation, showing the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
2. Carpet tile type, color, and dye lot.
3. Type, color, and location of edge, transition, and other accessory strips.
4. Transition details to other flooring materials.

C. Samples for Verification: Actual sample of finished products for each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

1. Carpet Tile: Full-size Sample.
2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch- long Samples.

D. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

1.3 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.

B. Qualification Statements: For Installer.

C. Sample Warranties: For carpet tile.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For carpet tiles. Include the following:

1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Extra Stock Material: Furnish extra materials, from the same production run, to Owner that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but no fewer than 10 full-size units.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.

1. Engage an installer and provide list of five (5) recent installations, minimum, who has performed installations of similar size, complexity and material type.
2. Installer(s) whose qualifications are submitted shall be the one(s) performing work on site.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI 104.

1.8 FIELD CONDITIONS

A. Comply with CRI 104 for temperature, humidity, and ventilation limitations.

B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.

C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended in writing by carpet tile manufacturer.

D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.9 WARRANTY

A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.

1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
2. Failures include, but are not limited to, the following:

a. More than 10 percent loss of face fiber, edge raveling, snags, and runs.
b. Loss of tuft-bind strength.
c. Excess static discharge.
d. Delamination.
e. Dimensional instability.

3. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE (CT-1)

A. Basis-of-Design Product: Subject to compliance with requirements, provide Milliken Floor Covering; Remix Remastered Collection or comparable product by one of the following:

1. Interface, Inc.
2. Mannington Commercial; a business unit of Mannington Mills, Inc.
3. Shaw Industries Group, Inc.; Berkshire Hathaway Company

B. Color: As indicated on Drawings.

C. Pattern: Bass Line Trimline.

D. Fiber Content: 100 percent nylon 6.

E. Fiber Type: Milliken-Certified WearOn Nylon.

F. Pile Characteristic: Tufted, Textured loop pile.

G. Dye Method: Precision dyeing.

H. Primary Backing/Backcoating: Manufacturer's standard composite materials.

I. Secondary Backing: Manufacturer's standard material.

J. Backing System: PVC-Free WellBAC Comfort Cushion.

K. Size: 50 by 50 centimeters.

L. Applied Treatments:

1. Soil-Resistance Treatment: Manufacturer's standard treatment.
2. Antimicrobial Treatment: Manufacturer's standard treatment hat protects carpet tiles as follows:

a. Antimicrobial Activity: Not less than 2 mm halo of inhibition for gram-positive bacteria, not less than 1 mm halo of inhibition for gram-negative bacteria, and no fungal growth, in accordance with AATCC 174.

M. Performance Characteristics:

1. Texture Appearance Retention Rating (TARR): Severe traffic, 3.5 minimum in accordance with ASTM D7330.
2. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm in accordance with NFPA 253.
3. Dry Breaking Strength: Not less than 100 lbf in accordance with ASTM D2646.
4. Delamination: Not less than 3.5 lbf/in. in accordance with ASTM D3936.
5. Dimensional Tolerance: Within 1/32 inch of specified size dimensions, as determined by physical measurement.
6. Colorfastness to Crocking: Not less than 4, wet and dry, in accordance with AATCC 165.
7. Colorfastness to Light: Not less than 4 after 80 AFU (AATCC fading units) in accordance with AATCC 16.3 Option 3.
8. Electrostatic Propensity: Less than 3.5 kV in accordance with AATCC 134.

2.2 CARPET TILE (CT-2)

A. Basis-of-Design Product: Subject to compliance with requirements, provide Milliken Floor Covering; Formwork Collection or comparable product by one of the following:

1. Interface, Inc.
2. Mannington Commercial; a business unit of Mannington Mills, Inc.
3. Shaw Industries Group, Inc.; Berkshire Hathaway Company

B. Color: As indicated on Drawings.

C. Pattern: Formwork.

D. Fiber Content: 100 percent nylon 6,6.

E. Fiber Type: Universal Fibers.

F. Pile Characteristic: Tufted, Textured loop pile.

G. Dye Method: 100 percent solution dyed.

H. Total Weight: 18 oz./sq. yd. for finished carpet tile.

I. Primary Backing/Backcoating: Manufacturer's standard composite materials.

J. Secondary Backing: Manufacturer's standard material.

K. Backing System: PVC-Free WellBAC Comfort Cushion.

L. Size: 50 by 50 centimeters.

M. Applied Treatments:

1. Soil-Resistance Treatment: Manufacturer's standard treatment.
2. Antimicrobial Treatment: Manufacturer's standard treatment hat protects carpet tiles as follows:

    a. Antimicrobial Activity: Not less than 2 mm halo of inhibition for gram-positive bacteria, not less than 1 mm halo of inhibition for gram-negative bacteria, and no fungal growth, in accordance with AATCC 174.

N. Performance Characteristics:

1. Texture Appearance Retention Rating (TARR): Severe traffic, 3.5 minimum in accordance with ASTM D7330.
2. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm in accordance with NFPA 253.
3. Dry Breaking Strength: Not less than 100 lbf in accordance with ASTM D2646.
4. Delamination: Not less than 3.5 lbf/in. in accordance with ASTM D3936.
5. Dimensional Tolerance: Within 1/32 inch of specified size dimensions, as determined by physical measurement.
6. Colorfastness to Crocking: Not less than 4, wet and dry, in accordance with AATCC 165.
7. Colorfastness to Light: Not less than 4 after 80 AFU (AATCC fading units) in accordance with AATCC 16.3 Option 3.
8. Electrostatic Propensity: Less than 3.5 kV in accordance with AATCC 134.

2.3 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended in writing by carpet tile manufacturer.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive types to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and that are recommended in writing by carpet tile manufacturer for releasable installation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance.

B. Examine carpet tile for type, color, pattern, and potential defects.

C. Concrete Slabs: Verify that finishes comply with requirements specified in Section 033000 "Cast-in-Place Concrete" and that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.

1. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
b. 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. Perform additional moisture tests recommended in writing by adhesive and carpet tile manufacturers. Proceed with installation only after substrates pass testing.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with CRI 104 and with carpet tile manufacturer's written installation instructions for preparing substrates.

B. Use trowelable leveling and patching compounds, in accordance with manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider, and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.

C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.

D. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

A. General: Comply with CRI 104, Section 10, "Carpet Tile," and with carpet tile manufacturer's written installation instructions.

B. Installation Method: Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive.

C. Maintain dye-lot integrity. Do not mix dye lots in same area.

D. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended in writing by carpet tile manufacturer.

E. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.

G. Install pattern parallel to walls and borders.

3.4 CLEANING AND PROTECTION

A. Perform the following operations immediately after installing carpet tile:

1. Remove excess adhesive and other surface blemishes using cleaner recommended in writing by carpet tile manufacturer.
2. Remove yarns that protrude from carpet tile surface.
3. Vacuum carpet tile using commercial machine with face-beater element.

B. Protect installed carpet tile to comply with CRI 104, Section 13.7.

C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 096813

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.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include preparation requirements and application instructions.

B. Samples for Verification: For each type of paint system and each color and gloss of topcoat. Submit actual paint drawdowns as specified below for verification Samples.

1. Submit Samples on rigid backing, 8 inches 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.

C. 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 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match paint products applied and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint Products: 5 percent, but not less than 1 gal. of each material and color applied.

1.4 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.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.5 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures of less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain each paint product from single source from single manufacturer.

2.2 INTERIOR PAINTS, GENERAL

A. Interior Paints: Subject to compliance with requirements, available products that may be incorporated into the Work include but are not limited to products listed in product types below and applicable interior 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 indicated in a color schedule.

2.3 PRIMERS

A. Latex Block Filler: Water-based, pigmented, high-solids, emulsion coating formulated to bridge and fill porous surfaces of CMU substrates in preparation for specified subsequent coatings.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company (The); PrepRite Block Filler, B25W25 or comparable product by one of the following:

a. Benjamin Moore & Co.
b. PPG Paints; PPG Industries, Inc.
c. Or approved equal

B. Interior Latex Primer Sealer: Pigmented, water-based latex sealer; formulated to reduce porosity of substrate for finish coats; for use on new interior plaster, concrete, and gypsum board substrates. Not intended for use on wood or previously painted surfaces.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company (The); Loxon Concrete and Masonry Primer Sealer, LX02W50 or comparable product by one of the following:

a. Benjamin Moore & Co.
b. PPG Paints; PPG Industries, Inc.
c. Or approved equal.

C. 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, concrete, and gypsum wallboard surfaces that are subsequently to be painted with latex finish coats.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company (The); ProMar 200 Zero VOC Interior Latex Primer, B28W2600 or comparable product by one of the following:

a. Benjamin Moore & Co.
b. PPG Paints; PPG Industries, Inc.
c. Or approved equal.

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.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company (The); Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series or comparable product by one of the following:

a. Benjamin Moore & Co.
b. PPG Paints; PPG Industries, Inc.
c. Or approved equal

2.4 WATER-BASED FINISH COATINGS

A. Interior, Water-Based Light Industrial Coating: Pigmented, water-based emulsion coating for interior primed wood and metal surfaces (e.g., walls, doors, frames, trim, and sash), providing resistance to moderate abrasion and mild chemical exposure and corrosive conditions.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company (The); Pro Industrial Acrylic Semi-Gloss, B66-650 Series or comparable product by one of the following:

a. Benjamin Moore & Co.

b. PPG Paints; PPG Industries, Inc.
c. Or approved equal.

2. Gloss and Sheen Level: Manufacturer's standard semigloss.

B. Interior, High-Performance Architectural Latex: Water-based, pigmented, low-VOC, emulsion coating formulated to provide a significantly higher level of performance than conventional latex paints in the areas of scrub resistance, burnish resistance, and ease of stain removal.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company (The); Pro Industrial Pre-Catalyzed Waterbased Epoxy, K45- Series or comparable product by one of the following:

a. Benjamin Moore & Co.
b. PPG Paints; PPG Industries, Inc.
c. Or approved equal

2. Gloss and Sheen Level: Manufacturer's standard eggshell.

2.5 DRY FALL COATINGS

A. Dry Fall, Latex: Pigmented, water-based, emulsion-type, fast-drying coating for use on interior plaster, concrete, gypsum board, primed wood, and metal ceilings.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company (The); Pro Industrial Waterborne Acrylic Dryfall, B42-181 Series or comparable product by one of the following:

a. Benjamin Moore & Co.
b. PPG Paints; PPG Industries, Inc.

2. 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. Concrete: 12 percent.
2. Masonry (Clay and CMU): 12 percent.

3. Gypsum Board: 12 percent. Verify that finishing compound is dry and sanded smooth.

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. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints to be painted exceeds that permitted in manufacturer's written instructions.

F. Steel Substrates: Remove loose rust, loose mill scale, loose shop primer, and other loose foreign matter. Clean using methods recommended in writing by paint manufacturer.

G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

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. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
5. 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.

D. Painting Fire-Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed to view in occupied spaces:

a. Equipment, including panelboards.
b. Uninsulated metal piping.
c. Uninsulated plastic piping.
d. Pipe hangers and supports.
e. Metal conduit.
f. Plastic conduit.
g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
h. Other items as directed by Architect.

2. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 FIELD QUALITY CONTROL

A. Dry-Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry-film thickness.

1. Touch up and restore painted surfaces damaged by testing.
2. If test results show that dry-film thickness of applied paint does not comply with paint manufacturer's written recommendations, apply additional coats as needed to provide dry-film thickness that complies with paint manufacturer's written recommendations.
3. Cost of retesting is Contractor's responsibility.

3.5 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 into 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.
4. Collect waste paint by type and deliver to recycling or collection facility.

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 an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE, CONCRETE SUBSTRATES

A. Horizontal (Nontraffic) Surfaces:

1. Water-Based Dry-Fall System:

a. Prime Coat: Matching topcoat.
b. Topcoat: Dry fall, latex, flat.

3.7 INTERIOR PAINTING SCHEDULE, MASONRY SUBSTRATES

A. CMU Substrates:

1. High-Performance Architectural Latex System:

a. Block Filler: Interior/exterior latex block filler.
b. Intermediate Coat: Matching topcoat.
c. Topcoat: Interior, high-performance architectural latex, eggshell.

3.8 INTERIOR PAINTING SCHEDULE, METAL SUBSTRATES

A. Steel and Iron Substrates:

1. Water-Based Light Industrial Coating System:

a. Prime Coat: Primer, rust-inhibitive, water based.
b. Intermediate Coat: Matching topcoat.
c. Topcoat: Interior, water-based, light industrial coating, semigloss.

3.9 INTERIOR PAINTING SCHEDULE, GYPSUM-BASED SUBSTRATES

A. Gypsum Board and Plaster Substrates:

1. High-Performance Architectural Latex System:

a. Prime Coat: Interior latex primer sealer.
b. Intermediate Coat: Matching topcoat.
c. Topcoat: Interior, high-performance architectural latex, eggshell.

END OF SECTION 099123

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 room-identification signs that are directly attached to the building.

1.3 DEFINITIONS

A. Accessible: In accordance with the accessibility standard.

1.4 COORDINATION

A. Furnish templates for placement of sign-anchorage devices embedded in permanent construction by other installers.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For room-identification signs.

1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
3. Show message list, typestyles, graphic elements including raised characters and Braille, and layout for each sign at least half size.

C. Product Schedule: For room-identification signs. Use same designations indicated on Drawings or specified.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.