

PROJECT MANUAL

FOR



CHESTER UPLAND SCHOOL DISTRICT

RESTROOM UPGRADES

Prepared By: MGE Associates

March 15, 2023

NOTICE OF ADVERTISEMENT FOR BIDS:

- 1. Chester Upland School District Restroom Upgrades**
- 2. Main Street Elementary HVAC and Window Upgrades**

Public notice is given that sealed bids/proposals will be received online via the PennBid Program by Chester Upland School District by April 14, 2023 until 4:00 PM prevailing time.

Chester Upland School District Restroom Upgrades

There will be a Non-Mandatory Pre-Bid Conference on Wednesday, March 22, 2023 at 9:00 AM. The meeting will be held on-site at the Chester High School. Any questions or clarifications regarding attendance of this meeting can be submitted via the web-based system.

Main Street Elementary School HVAC and Window Upgrades

There will be a Non-Mandatory Pre-Bid Conference on Wednesday, March 22, 2023 at 11:00 AM. The meeting will be held on-site at Main Street Elementary School. Any questions or clarifications regarding attendance of this meeting can be submitted via the web-based system.

Bidders are required to submit a surety in the form of a bond or equivalent meeting 10% of the overall bid price in compliance with the contract documents. Bid bonds will be returned to the non-awarded bidders upon the execution of the contract. The successful Bidder shall also be required to provide a Performance Bond in an amount of one hundred percent (100%) of the Contract amount within ten (10) calendar days of receipt of written notice of acceptance of the Bid.

There is no physical public bid opening for this project, bids will be revealed via the PennBid website.

A uniform fee of 0.333% ($\frac{1}{3}$ of 1 percent) of the bid amount (up to \$5,000) is applied only to bidders who are awarded contracts. No fees apply to bidders who submit without being awarded the contract.

All interested parties must submit questions via the web based system, by the posted deadline for questions. Bidders are not permitted to contact the Engineer or staff directly.

The contract is subject to PA Procurement Rules which include Prevailing Wage Requirements.

The Contract Documents contain all pertinent regulations. Award of the contract will be to the lowest responsible bidder. The Owner reserves the right to reject any or all bids or to accept any portion of any bid, and to award Contracts as is deemed best for the Owner.

Receiver Nafis Nichols
Chester Upland School District

Advertised in the Delaware County Times:
Wednesday, March 15, 2023 and Sunday, March 19, 2023

TABLE OF CONTENTS

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

000100	SAMPLE BID AND CONTRACT DOCUMENTS
	NOTICE TO CONTRACTORS
	NONCOLLUSION AFFIDAVIT
	BID BOND
	INSTRUCTIONS TO BIDDERS
	GENERAL CONTRACT CONDITIONS
	SUPPLEMENTAL GENERAL CONDITIONS
	CONTRACT
	PAYMENT BOND
	PERFORMANCE BOND
	NOTICE OF AWARD
	NOTICE TO PROCEED
	CONTRACT CHANGE ORDER
004116	BID FORM - STIPULATED SUM
004322	UNIT PRICES FORM
006000	PROJECT FORMS
006000.1	ADDITIONAL CONTRACT PROVISIONS AND FORMS
	SUBCONTRACTOR DECLARATION
	NONDISCRIMINATION CLAUSE
	CONFLICT OF INTEREST
	AFFIDAVIT RE: ACCEPTING PROVISIONS OF THE WORKMEN'S
	COMPENSATION ACT
	PA PREVAILING WAGE RATE DETERMINATION
	BIDDERS QUALIFICATION
	PUBLIC WORKS EMPLOYEMENT VERIFICATION FORM

DIVISION 01 - GENERAL REQUIREMENTS

011200	SUMMARY
012200	UNIT PRICES
012500	SUBSTITUTION PROCEDURES
012600	CONTRACT MODIFICATION PROCEDURES
012900	PAYMENT PROCEDURES
013100	PROJECT MANAGEMENT AND COORDINATION

013233	PHOTOGRAPHIC DOCUMENTATION
013300	SUBMITTAL PROCEDURES
014000	QUALITY REQUIREMENTS
014200	REFERENCES
015000	TEMPORARY FACILITIES AND CONTROLS
016000	PRODUCT REQUIREMENTS
017300	EXECUTION
017700	CLOSEOUT PROCEDURES
017823	OPERATION AND MAINTENANCE DATA
017839	PROJECT RECORD DOCUMENTS

TECHNICAL DIVISIONS

DIVISION 02 – EXISTING CONDITIONS

024119	SELECTIVE DEMOLITION
--------	----------------------

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

079200	JOINT SEALANTS
--------	----------------

DIVISION 08 – OPENINGS

081113	HOLLOW METAL DOORS AND FRAMES
083113	ACCESS DOORS AND FRAMES

DIVISION 09 – FINISHES

090190.52	MAINTENANCE REPAINTING
092216	NON-STRUCTURAL METAL FRAMING
092900	GYPSUM BOARD
093013	CERAMIC TILING
095123	ACOUSTICAL TILING
096723	RESINOUS FLOORING AND COATINGS

DIVISION 10 – SPECIALTIES

101423.16 ROOM-IDENTIFICATION PANEL SIGNAGE

102113.13 METAL TOILET COMPARTMENTS

102800 TOILET ACCESSORIES

DIVISION 22 – PLUMBING

224100 GENERAL PLUMBING FIXTURES

DIVISION 26 – ELECTRICAL

265100 INTERIOR LIGHTING

NOTICE TO CONTRACTORS

Sealed proposals for the CUSD Restroom Upgrades will be received electronically via the PennBid Program by the Chester Upland School District until April 14, 2023 until 4:00 PM prevailing time, at which time said bids will be publicly opened with the results made available via PennBid.

Plans, Specification, and bid forms may be obtained at no cost on PennBid (www.pennbid.net).

Each bid must be accompanied by either a bid bond in an amount of ten (10%) of the bid amount from a surety satisfactory to the District or by certified check or letter of credit upon a solvent bank in the amount of ten (10%) of the bid amount in favor of the District. Bid Bonds shall be accompanied by Proof of Authority of the official or agent signing the bond.

Attention of bidders is called to all of the requirements contained in this bid packet, particularly to the application of the PA Prevailing Wage Requirements, various insurance requirements, various equal opportunity provisions, and the requirement of a payment bond and performance bond for 100% of the contract price.

All prospective bidders are required to present proof of an acceptable disposal method approved by the Pennsylvania Department of Environmental Resources or counterpart Agency in another State. The proof may consist of a copy of a State Solid Waste Disposal Permit to the prospective bidder or a Letter of Approval for the use of a proposed or existing disposal facility which has a permit or is under review for a permit.

Attention is called to the fact that the Contractor must ensure that employees and applicants for employment are not discriminated against because of their race because of their race, color, religion, sex, handicap, familial status, or national origin. Hearing impaired individuals may contact the District through the AT&T Relay Center at 1-800-654-5984.

No bidder may withdraw his bid within sixty (60) days after the actual date of the opening thereof. Chester Upland School District reserves the right to waive any informalities or to reject any or all bids.

NONCOLLUSION AFFIDAVIT

State of

BID Identification: Chester Upland School District Restroom Upgrades

CONTRACTOR _____, being first duly sworn, deposes and says that he is _____ (sole owner, a partner, president, secretary, etc.) of the party making the foregoing BID; that such BID is not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization, or corporation; that such BID is genuine and not collusive or sham; that said BIDDER has not directly or indirectly induced or solicited any other BIDDER to put in a false or sham BID, and has not directly or indirectly colluded, conspired, connived, or agreed with any BIDDER or any one else to put in a sham BID, or that any one shall refrain from bidding; that said BIDDER has not in any manner, directly or indirectly, sought by agreement, communication or conference with any one to fix the BID price of said BIDDER or of any other BIDDER, or to fix any overhead, profit, or cost element of such BID price, or of that of any other BIDDER, or to secure any advantage against the OWNER awarding the contract or anyone interested in the proposed contract; that all statements contained in such BID are true; and, further, that said BIDDER has not, directly or indirectly, submitted his BID price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid and will not pay any fee in connection therewith, to any corporation, partnership, company, association, organization, BID depository, or to any member or agent thereof, or to any other individual except to such person or persons as have a partnership or other financial interest with said BIDDER in his general business.

Signed:

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

Seal of Notary

BID BOND

KNOW ALL MEN BY THESE PRESENTS, THAT WE, _____ as PRINCIPAL, and _____ as SURETY, are held and firmly bound unto the _____ (hereinafter called the OWNER), in the penal sum of _____ DOLLARS (\$_____) lawful money of the United States, for payment of which sum well and truly to be made, we bond ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THE OBLIGATION IS SUCH that whereas the Principal has submitted the accompanying Bid dated _____ for _____.

NOW, THEREFORE, if the Principal shall not withdraw said Bid within the time specified therein after the opening of the same, and shall within ten (10) days after the Principal is notified by the Owner of the award of such Contract to him, enter into a written contract with the Owner, in accordance with the Bid as accepted; and give bond with good and sufficient surety or sureties as may be required for the faithful performance and proper fulfillment and labor supplied, if required in said Contract; or in event of the withdrawal of said Bid within the period specified, or the failure to enter into such Contract and give such bonds within the time specified if the Principal shall pay the Owner the difference between the amount specified in said Bid and the amount for which the Owner may procure the required materials or supplies, or both, if the latter amount of the former, together with any other expenses and costs that may have been incurred by the Owner, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above bonded parties have executed this instrument under their several seals this day of _____, 20_____, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

WITNESSED BY:

(Individual Principal)

Business Address:

ATTEST:

Corporate Principal

Corporate Surety

By:

SEAL

(Power of Attorney for person signing for Surety Company must be attached to bond.)

INSTRUCTIONS TO BIDDERS

1. **RECEIPT AND OPENING OF BIDS:** Chester Upland School District (herein called the "Owner"), invites bidders to submit sealed bids that will be received online via the PennBid Program by the Chester Upland School District by April 14, 2023, 4:00 PM prevailing time. There is no physical bid opening for this project, bids will be revealed via the PennBid website.

A uniform fee of 0.333% (1/3 of 1 percent) of the bid amount (up to \$5,000.00) is applied only to bidders who area awarded contracts. No fees apply to bidders who submit without being awarded the contract.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within thirty (30) days after the actual date of the opening thereof.

2. **PREPARATION OF BID:** Each bid must be submitted electronically via PennBid, on the prescribed form and accompanied by a Bid Bond, Certified Check, or Letter of Credit, the Non-collusion Affidavit, and Subcontractor Declaration Form. All blank spaces for bid prices must be completed, in ink or typewritten, in both words and figures, and the foregoing Certifications must be fully completed and executed when submitted. In case of discrepancies of written words and figures, the prices written in words shall govern.

All bids will be received through the PennBid Program and bidder shall adhere to requirements detailed on the Bid located on the website.

3. **MODIFICATION OF BIDS:** Any bidder may modify his/her bid within PennBid at any time prior to the due date and time listed in the invitation to bid.
4. **METHOD OF BIDDING:** The Owner invites unit price/lump sum price bids as indicated in the Bid Form.

If the lowest total responsive bid received exceeds the amount of funds available to finance the contract, the Owner may:

- a. Reject all bids;
- b. Augment the funds available in an amount sufficient to enable award to the lowest responsive bidder or bidders;
- c. Take the base bid less the alternative deductible (if any) as listed on the proposal form as to produce a net amount which is within available funds.

5. **QUALIFICATIONS OF BIDDER:** The Owner may make such investigations as he/she deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein. Conditional bids will not be accepted.
6. **BID SECURITY:** Each bid must be accompanied by cash, certified check of the bidder, or a bid bond prepared on the form of bid bond attached hereto, duly executed by the bidder as principal and having as surety thereon a surety company approved by the Owner. Such cash, checks or bid bonds will be returned to all except the three lowest bidders within three days after the opening of bids, and the remaining cash, checks or bid bonds will be returned promptly after the Owner and the accepted bidder have executed the contract,

or, if no award has been made within thirty (30) days after the date of the opening of bids, upon demand of the bidder at any time thereafter, so long as he/she has not been notified of the acceptance of his/her bid. Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

7. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT: The successful bidder, upon his/her failure or refusal to execute and deliver the contract and bonds required within ten (10) days after he/she has received notice of the acceptance of his/her bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his/her bid.
8. CONDITIONS OF WORK: Each bidder must inform himself/herself fully to the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of his/her obligation to furnish all material and labor necessary to carry out the provisions of his/her contract. Insofar as 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.
9. OBLIGATION OF BIDDER: At the time of the opening of bids each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the plans and contract documents (including all addenda). The failure or omission of any bidder to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect of his/her bid.
10. EXAMINATION OF SITE: Each bidder shall, and is hereby directed to inspect the entire site of the proposed work and judge for himself/herself as to all the circumstances affecting the cost and progress of the work and shall assume all patent and latent risks in connection therewith.
11. SOIL CONDITIONS: NA
12. WORKING FACILITIES: The plans show, in the general manner, the existing structures and the land available for construction purposes. The bidders must satisfy themselves of the conditions and difficulties that may be encountered in the execution of the work at this site.
13. ADDENDA AND INTERPRETATIONS: No official interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally.

Every request for such interpretation should be in writing and will be submitted via the "Clarifications" feature within PennBid, and to be given consideration, must be received at least five (5) days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be distributed to all prospective bidders, not later than three (3) days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his/her bid as submitted. All addenda so issued shall become part of the contract documents.

14. WATER SUPPLY: NA
15. SIGNATURE OF BIDDERS: The firm, corporate or individual name of the bidder must be signed in ink in the space provided for the signatures on the proposed blanks. In the case of a corporation, the title of the officer signing must be stated and such officer must be thereunto duly authorized and the seal of said corporation duly affixed. In the case of a partnership, the signature of at least one of the partners must follow the firm name, using the term "member of the firm". In the case of an individual, use the terms "doing business as", or "sole owner". The bidder shall further state in his proposal the name and address of each person or corporation interested therein.
16. NOTICE OF SPECIAL CONDITIONS: Attention of the bidder is particularly called to those parts of the General Contract Conditions and other contract documents and specifications which deal with the following:

- a. Insurance requirements
- b. Provisions, Pennsylvania Prevailing Wage Act
- c. Requirement for a payment bond and performance bond for 100% of contract price
- d. Requirement that all subcontractors be approved by the Owner
- e. Time-for-completion and liquidated damages requirements
- f. Safety standards
- g. Contractor's responsibility to obtain permits
- h. Affirmative Action and Equal Opportunity provisions
- i. Nondiscrimination/Sexual Harassment Clause

17. ADDITIONAL OBLIGATIONS UPON CONTRACT AWARD: Upon award of the contract but prior to issuance of the notice to proceed, the contractor shall submit all of the following documents, completed as required:

- (a) Acceptance of Notice of Award
- (b) Contract
- (c) Insurance certificate(s) and/or policy(ies)
- (d) Performance & Payment bonds
- (e) Subcontractor declaration form
- (f) (If over \$10,000:) Certification of Bidder Regarding Equal Employment Opportunity
- (g) (If over \$10,000:) Certification(s) by (all) Proposed Subcontractors Regarding Equal Employment Opportunity
- (h) (Omitted)
- (i) (Omitted)
- (j) (Omitted)
- (k) (Omitted)
- (l) (All) Subcontractor's Certification(s) Concerning Labor Standards and Prevailing Wage Requirements

GENERAL CONTRACT CONDITIONS

ARTICLE 1 - CONTRACT AND CONTRACT DOCUMENTS

- A. All applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.
- B. The Plans, Specifications and Addenda, hereinafter enumerated in Paragraph 1 of the Supplemental General Conditions shall form part of this Contract and the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth. The table of contents, titles, headings, running headlines and marginal notes contained herein and in said documents are solely to facilitate reference to various provisions of the Contract Documents and in no way affect, limit or cast light on the interpretation of the provisions to which they refer.

ARTICLE 2 - PERFORMANCE AND PAYMENT BONDS

Simultaneously with his/her delivery of the executed contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the Owner. The bond shall be for 100 percent of the contract price. A Payment Bond and Performance Bond are required. Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney. Under certain conditions, and within the limits of State and local laws and regulations, the Owner may waive the requirement that the Payment and Performance Bond be underwritten by a surety company and may authorize in lieu thereof, a personal bond backed by a letter of credit from a local lending institution for the full value of the Contract.

ARTICLE 3 - WAGE RATES

In the event that the rate of wages paid for any trade or occupant in the locality where such work is being performed are under current collective agreements or understandings between bona fide organizations of labor and employer, then the wages to be paid shall be not less than such agreed wage rates, nor less than the minimum rates compiled by the Commonwealth of Pennsylvania. A copy of these prevailing rates of wages has been included in these specifications.

Every Contractor and Subcontractor who is subject to this contract shall, as soon as he/she begins performance under his/her contract with the Owner, supply the Owner a schedule of the dates on which he/she is required to pay wages to employees. After construction begins he/she shall also deliver to the prevailing wage coordinator a weekly, a certified copy of his/her payroll which shall exhibit for each employee paid any wages, name, current address, identification number, number of hours worked each day of the pay period and the total for each week, hourly rate of pay, job classification, fringe payments, and deductions from wages. The certification of each payroll shall be executed by the Contractor, Subcontractor, or duly appointed agent thereof and shall recite that the payroll is correct and complete and that the wage rate shown is not less than those required by the contract.

ARTICLE 4 - OMITTED

ARTICLE 5 - INSURANCE

- A. The contractor shall not commence work under this contract until he/she has obtained all the insurance required hereunder and such insurance has been approved by the Owner, nor shall the Contractor allow any Subcontractor to commence work on his/her subcontract until similar

insurance required of the Subcontractor has been so obtained and approved. Approval of the insurance by the Owner shall not relieve or decrease the liability of the Contractor hereunder.

- B. The Contractor shall file with the Owner all Certificate(s) of Insurance as are necessary to document the insurance coverage required hereunder, subject to the approval of the Owner and receipt of any additional forms/documentation requested, prior to final execution of Agreement Contract and issuance of the Notice to Proceed.

- C. Worker's Compensation.

All contractors and subcontractors shall acquire and maintain, during the term of the contract, Worker's Compensation insurance in full compliance with the laws of the State of Pennsylvania. The contractor shall at all times indemnify and save harmless the Owner from all claims for worker's compensation which may be made by any of the employees of any subcontractor to whom the Contract may have let the performance of any part of the work embraced in this contract, and the Contractor will appear for and defend the Owner against any and all such claims.

- D. Contractor's Liability Insurance.

- (i) The Contractor shall acquire and maintain during the term of the Contract Bodily Injury and Property Damage Liability Insurance under a standard Comprehensive General/Automobile Liability Policy which shall provide and include coverage on all Contractor's Operations, Contractor's Protective (Sublet) Liability, Contractual Liability, Completed Operations Liability, Owned Automobiles and Non-owned and Hired Automobiles.
- (ii) Property Damage Liability Insurance shall be provided on any demolition, blasting, excavating, shoring or similar operation on an "if any" basis.
- (iii) Bodily Injury Liability limits shall be for an amount of no less the Five Hundred Thousand (\$500,000) Dollars for injuries, including wrongful death to any one person and subject to the same limit for each person, in amount of not less than One Million (\$1,000,000) Dollars on the account of any one occurrence.
- (iv) Property Damage Liability Insurance shall be in an amount of not less than Five Hundred Thousand (\$500,000) Dollars per occurrence. General Liability shall be extended to provide "Broad Form Property Damage Liability," and in an amount of not less the One Million (\$1,000,000) dollars aggregate for damage on account of all occurrences.

(v) Any combination of underlying Comprehensive General/Automobile Liability coverage with Umbrella/Excess Liability coverage which provides no less than One Million (\$1,000,000) Dollars Single Limit Bodily Injury & Property Damage Liability Insurance for the Contractor will also be acceptable.

(vi) The owner may adjust the liability limits to coincide with local government procurement policies and practice within the limits of state and local law.

E. Builder's Risk Insurance.

Each Contractor shall maintain insurance to protect himself and the Owner, jointly, from loss incurred by fire, lightning, extended coverage hazards, vandalism, theft, explosion and malicious mischief in the full amount of the Contract and such insurance shall cover all labor and materials connected with the work, including materials delivered to the site but not yet installed.

F. Installation Floater Insurance.

When a Contractor is involved solely in the installation of materials and not in the construction of a building, an Installation Floater is required in lieu of a Builder's Risk Policy with the same general conditions applying as set forth in paragraph E.

G. The Policies as listed above shall all contain the following special provisions:

- (i) "The Company agrees that thirty (30) days prior to cancellation or reduction of the insurance afforded by this policy with respect to the Contract involved, written notice will be mailed to the Chester Upland School District."
- (ii) The maintaining of such insurance as outlined herein shall in no way constitute a waiver of legal liability for damage to any adjoining buildings or their contents or the work and property of others on the site beyond the limits of insurance thus maintained. The Contractor shall hold the Owner free and harmless from any injury and damage resulting from the negligent or faulty performance of the Contract by the Contractor or by his/or her Subcontractors.

H. Additional Insured: Chester Upland School District and MG Engineering Associates, LLC

ARTICLE 6 - PENNSYLVANIA STEEL PRODUCTS PROCUREMENT ACT (NO. 1978-3)

If any steel products are to be used or supplied in the performance of the contract, only steel products produced in the United States shall be used or supplied in the performance of the contract or any subcontracts thereunder. This provision shall not apply in any case where the head of the public agency, in writing, determines that the type of steel products necessary to the performance of the contract are not produced in the United States in sufficient quantities to meet the requirements of the contract.

- (iii) Each Contractor shall hold the Owner harmless from all payments for patents, either as royalty or otherwise, in the use of materials, methods, appliances, etc., that he may be in any way involved in or connected with any part of his work or the work of his Subcontractors.

- (iv) Prior to commencement of any work under Contract, the Contractor shall furnish one (1) copy of Declaration of Insurance as evidence of coverage.

ARTICLE 7 - SAFETY

- A. The Contractor will be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. He/She will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury, or loss to all employees on the work and other persons who may be affected thereby, all the work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.
- B. The Contractor will erect and maintain, as required by the conditions and progress of the Work, all necessary safeguards for safety protection. He/She will notify owners of adjacent utilities when prosecution of the work may affect them.
- C. The Contractor shall comply with the safety standards provisions of applicable laws, building and construction codes and the manual of Accident Prevention in Construction published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of Title 29 of the Code of Federal Regulations, Section 1518 as published in the "Federal Register" Volume 36, No. 75, Saturday, April 17, 1971.
- D. The Contractor shall maintain at his/her office or other well known place at the job site, all articles necessary for giving first aid to the injured, and shall make standing arrangements for the immediate removal to a hospital or a doctor's care of persons (including employees) who may be injured at the job site. In no case shall employees be permitted to work at a job site before the employer has made a standing arrangement for removal of injured persons to a hospital or a doctor's care.
- E. Lights, signs and barricades shall be used to maintain traffic and safety for vehicular and pedestrian traffic during the course of this contract in accordance with the specifications.

ARTICLE 8 - PERMITS

The Contractor is responsible for obtaining and paying for all necessary permits and Licenses from the proper authorities. The Contractor shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the Contract Documents are at variance therewith, he/she shall promptly notify the Owner in writing.

ARTICLE 9 - SUPERVISION

- A. The Contractor will supervise and direct the work. He/She will be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The Contractor will employ and maintain on the work a qualified supervisor or superintendent who shall have been designated in writing by the Contractor as the Contractor's representative at the site. The Supervisor shall have full authority to act on behalf of the Contractor and communications given to the supervisor shall be as binding as if given to the Contractor. The supervisor shall be present and on the site at all times as required to perform adequate supervision and coordination of the work.
- B. The Owner and its representatives will at all times have access to the work. In addition, authorized representatives and agents of any participating federal or County agency shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The Contractor will provide proper facilities for such access and observation of the work and also for any inspection or testing thereof.

- C. The Contractor shall submit a proposed program of operation, showing clearly how he/she proposed to conduct the work as to bring about the completion of his/her work within the time limit specified. This program shall outline the proposed sequence of operations, the rates of progress and the dates when his/her work will be sufficiently advanced to permit the installation of the work under other contracts, and the estimated progress payments due under the Contract. The work under this contract shall be so scheduled that as structures are completed, they can be placed into useful operation with a minimum of delay. The program shall be subject to the approval of the Owner.
- D. All construction as proposed along all City, Township, County, State and Federal roads including storage and stockpiling of materials, is to be conducted within the limits of the public right-of-way. Bracing, sheeting and shoring shall be used to keep all construction work within the construction limits unless work agreements are secured from the adjacent property Owners. It is the Contractor's responsibility to secure these work agreements, if deemed necessary. Copies of the work agreements shall be delivered to the Engineer and the Owner prior to any work beginning on the effected property.

ARTICLE 10 - CLAIMS AGAINST CONTRACTOR

The Contractor shall indemnify and save the Owner or the owner's agents harmless from all claims growing out of the lawful demands of Subcontractor's laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the work. The Contractor shall, at the Owner's request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged or waived. If the Contractor fails to do so the Owner may, after having notified the Contractor, either pay unpaid bills or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is fully finished that all liabilities have been fully discharged whereupon payment to the Contractor shall be resumed, in accordance with the terms of the Contract Documents, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to either the Contractor, his Surety, or any third party. In paying any unpaid bills of the Contractor, any payment so made by the Owner shall be considered as a payment made under the Contract Documents by the owner to the Contractor and the Owner shall not be liable to the Contractor for any such payments in good faith.

ARTICLE 11 - SUBCONTRACTING

- A. Neither the Contractor nor the owner shall sell, transfer, assign, or otherwise dispose of the Contract or any portion thereof, or of his right, title, or interest therein, or his obligations thereunder.
- B. The Contractor shall not sublet, sell, transfer or assign any portion of the contract without consent of the Owner or his/her designated agent. No subcontract, or transfer of contract, shall in any way release the Contractor of his/her liability under the contract and bonds.
- C. The Contractor shall not award work to Subcontractor(s) not identified on the Subcontractors Declaration Form as submitted with bid, without
 - i) Prior approval of the Owner
 - ii) Submission of all certifications as required in the INSTRUCTIONS TO BIDDERS. The Contractor shall be fully responsible to the Owner for the acts and omissions of the subcontractor(s), and of persons, either directly or indirectly employed by them, as he/she is for the acts and omissions of persons directly employed by him/her.

ARTICLE 12 - CHANGE OF WORK

- A. The Owner reserves the right to make, at any time during the progress of the work, such increases or decreases in quantities and such alterations in details of work as may be deemed necessary or desirable. Such increases or decreases and alterations shall not invalidate the contract nor release the surety, and the Contractor agrees to perform the work as altered, the same as if it had been a part of the original contract.
- B. Authorized alterations in plans or quantities of work involving work not covered by unit prices in the proposal shall be paid for as stipulated in the change order authorizing such work.
- C. No changes in work covered by the approved Contract shall be made without having prior written approval of the Owner.

ARTICLE 13 - TIME

- A. The Date of beginning and the time for completion of the work are essential conditions of the Contract Documents and the work embraced shall be commenced on a date specified in the Notice to Proceed.
- B. The Contractor will proceed with the work at such rate of progress to ensure full completion within the Contract Time. It is expressly understood and agreed, by and between the Contractor and the Owner, that the Contract Time for the completion of the work described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the work.
- C. The Contract Time to fully complete the project shall be consecutive calendar days following the date of commencement of work to be specified in a written "Notice to Proceed".
- D. If the Contractor shall fail to complete the work within the Contract Time, or extension of time granted by the Owner, the Contractor will pay to the Owner for liquidated damages \$500.00 for each calendar day that the Contractor shall be in default after the time stipulated in the Contract Documents.

ARTICLE 14 - COMPLETION OF WORK

- A. The Contractor shall guarantee all materials and equipment furnished and work performed for a period of one year from the date of Substantial Completion. The Contractor warrants and guarantees for a period of one year from the date of Substantial Completion of the improvement that it is free from all defects due to faulty materials or workmanship, and the Contractor shall promptly make corrections as may be necessary by reason of such defects. The owner will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make repairs, adjustments, or other work, which may be made necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred. Upon 100% completion of the improvements, the contractor shall provide a Maintenance Bond in the amount of 15% of the cost of the improvements for a period of 1-year.
- B. When the work, including that performed by Subcontractors, is completed, the site shall be cleaned of all rubbish and debris caused by the construction. All sheds or other temporary structures, surplus materials, and equipment shall be removed and the project left in a neat and presentable condition.

ARTICLE 15 - TERMINATION

After ten (10) days from delivery of a Written Notice to the Contractor, the Owner may, without cause and without prejudice to any other right or remedy elects to terminate the Contract. In such case the Contractor shall be paid for all work executed and any expense sustained plus reasonable profit, unless such termination was due to the act or conduct of the Contractor.

ARTICLE 16 - PAYMENT

Payment to the Contractor shall be made by the Chester Upland School District upon receiving invoice from contractor and inspection of work completed. The Owner's representative and the project engineer shall certify on the pay request that the completed work has been approved prior to the submission of the invoice. Retainage to be held should be reflected by the engineer/architect on the contractor's original invoice. A turn-around time of 3-4 weeks is expected before said funds are forwarded to the contractor.

It is important that the progress schedule be based on achievable goals, and that the Contractor makes every effort to meet target dates. The Chester Upland School District may hold the pay request, or a portion of the pay request, in cases where the Contractor is found to be in violation of any of the terms and conditions in this contract, e.g. federal labor standards compliance, until such violations are corrected.

ARTICLE 17 - LIVE UTILITIES AND OTHER PROPERTY

The contractor shall assume all responsibility for damage attributed to him to any property upon, or passing through, the Project Area, but excluded from the work or not owned by the Local Public Agency, such as utility lines, surface improvements, or like items.

If disconnections of underground utility services are required to be made in public thoroughfares, the Contractor shall comply with all local requirements and regulations respecting the barricade of streets, the removal and restoration of pavement, and other pertinent matters.

ARTICLE 18 - LIVE UTILITIES AND OTHER PROPERTY

The contractor shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms conditions and agreements of said contract.

If disconnections of underground utility services are required to be made in public thoroughfares, the Contractor shall comply with all local requirements and regulations respecting the barricade of streets, the removal and restoration of pavement, and other pertinent matters.

ARTICLE 19 - HOLD HARMLESS

The contractor shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the Local Public Agency, with or without notice to the Surety, and he shall satisfy all claims and demands incurred under such contract and shall fully indemnify and save harmless the Local Public Agency from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Local Public Agency all outlay and expense which the Local Public Agency may incur in making good any default.

SUPPLEMENTAL GENERAL CONDITIONS

1. ENUMERATION OF PLANS, SPECIFICATIONS AND ADDENDA

Following are the Plans, Specifications, and Addenda which form a part of this contract, as set forth in Article I of the General Contract Conditions, "Contract and Contract Documents".

<u>Drawings:</u>	Date
Floor plan layouts	As Per Documents
<u>Schedules:</u>	
Scope of work matrix	
<u>Specifications:</u>	Page
Technical Specifications	
Addenda:	Number Date

2. STATED ALLOWANCES: Not Included

3. SPECIAL HAZARDS : Not Included

4. CONTRACTOR'S AND SUBCONTRACTOR'S PUBLIC LIABILITY, VEHICLE LIABILITY, AND PROPERTY DAMAGE INSURANCE

See Article 5 of General Contract conditions.

The Contractor shall either (1) require each of his/her subcontractors to procure and to maintain during the life of his/her subcontract, Subcontractor's Public Liability and Property Damage of the type and in the same amounts as specified in Article 5, or (2) insure the activities of his/her subcontractors in his/her own policy.

6. BUILDER'S RISK INSURANCE

The Contractor will maintain Builder's Risk Insurance (fire and extended coverage) on a 100 percent completed value basis on the insurable portions of the project for the benefit of the Owner, the Contractor, and all subcontractors, as their interests may appear.

CONTRACT

THIS AGREEMENT made this _____ day of _____, 20____, by and between _____ hereinafter called the "Contractor, and _____ hereinafter called the "Owner".

WITNESSETH, that the Contractor and the Owner for the considerations stated herein mutually agree as follows:

ARTICLE 1. Statement of Work.

The Contractor shall furnish all supervision, technical personnel, labor, materials, machinery, tools, equipment and services, including utility and transportation services, and perform and complete all work required for the construction of the Improvements embraced in the project; namely, _____, and required supplemental work for the _____ all in strict accordance with the Contract Documents including all addenda thereto, numbered _____, dated _____, and _____ dated _____, all as prepared by _____ acting and in these Contract documents preparation, referred to as the "Engineer".

ARTICLE 2. The Contract Price.

The Owner will pay the Contractor for the total quantities of work performed at the unit prices stipulated in the Bid for the respective items of work completed for the sum not to exceed _____ (Dollars) subject to additions and deductions as provided in Section ____ hereof.

ARTICLE 3. Contract.

The executed contract documents shall consist of the following:

- a. This Agreement
- b. Addenda
- c. Invitation for Bids
- d. Instructions to Bidders
- e. Signed copy of Bid
- f. General Conditions, Parts I and II
- g. Special Conditions
- h. Technical Specifications
- i. Drawings (as listed in the Schedule of Drawings)
- j. Other Contract Provisions required by Chester Upland School District

This Agreement, together with other documents enumerated in this ARTICLE 3, which said other documents are as fully a part of the Contract as if hereto attached or herein repeated, forms the Contract between the parties hereto. In the event that any provision in any component part of this Contract conflicts with any provision of any other component part, the provision of the component part first enumerated in this ARTICLE 3 shall govern, except as otherwise specifically stated.

IN WITNESS WHEREOF, the parties hereto have caused this AGREEMENT to be executed in _____ original copies on the day and year first above written.

CONTRACTOR:

OWNER:

Signature

Signature

Typed/printed name

Typed/printed name

Title

Title

Certifications:

I, _____, certify that I am the _____ of the corporation named as Contractor herein; that _____ who signed this Agreement on behalf of the Contractor, was then _____ of said corporation; that said Agreement was duly signed for and in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

Seal) _____ (Corporate

PERFORMANCE AND PAYMENT BOND (OR BONDS)

Following the Form of Agreement, attach the approved form of the statutory surety bond or bonds to insure the performance of the Contract and payment of labor and materials. In addition to the corporation signatures of the surety company(ies) on the bond(s), each bond should be countersigned by the surety company's attorney-in-fact, authorized to act within the state in which the Project is situated.

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____ of _____, as PRINCIPAL and _____ a corporation incorporated under the laws of the State of _____ as Surety, are held and firmly bond unto the _____ in the full and just sum of _____ (\$ _____) dollars, lawful money of the United States of America, to be paid to the said _____ or its assigns, to which payment well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above bounden Principal has entered into a contract with the above, hereinafter called Obligee, bearing even date herewith, for the improvement of:

for approximately the sum of _____ (\$ _____) dollars.

NOW, THEREFORE, the condition of this obligation is such that the above bounden PRINCIPAL shall and will promptly pay cause to be paid in full all sums of money which may be due by contractor or otherwise, to any individual, firm, partnership, association or corporation, for all material furnished or labor supplied or performed in the prosecution of the work, whether or not the said material or labor entered into and became component parts of the work and for rental of the equipment used and services rendered by public utilities in, or in connection with the prosecution of such work, then this obligation to be void, otherwise to remain in full force and effect.

THE PRINCIPAL and SURETY, hereby, jointly and severally, agree with the Obligee herein that any individual firm, partnership, association or corporation, which has performed labor or furnished material in the prosecution of the work as provided, and any public utility which has not been paid in full therefore, may sue in assumpsit on this Payment Bond, in his, their, or its own name and may prosecute the same to final judgment for such sum or sums as may be justly due him, them or it, and have execution thereon. Provided, however, that the Obligee shall not be liable for the payment of any costs of expenses of such suit.

RECOVERY by any individual, firm, partnership, association or corporation hereunder shall be subject to the provisions of the "Public Works Contractor's Bond Law of 1967", Act No. 385, approved December 20, 1967, P.L. 869, which Act shall be incorporated herein and made a part hereof, as fully and completely as though its provisions were fully and at length herein recited.

It is further provided that any alteration which may be made in the terms of the contract or its work to be done or materials to be furnished or labor to be supplied or performed under it or the giving by the Obligee of any extension of time for the performance of the contract or any other forbearance on the part of either the Obligee or the Principal to the other, shall not in any way release the PRINCIPAL and the SURETY or SURETIES of any such alteration, extension or forbearance being hereby waived.

IN WITNESS WHEREOF, the said PRINCIPAL and SURETY have duly executed this Bond under seal the _____ day of _____, 20____.

WITNESS:
PLACE
SEAL
HERE

Contractor

Title:

BY

Title:

WITNESS:
PLACE
SEAL
HERE

Surety Company

Title:

Title:

PERFORMANCE BOND
(With Corporate Surety)

KNOW ALL MEN BY THESE PRESENTS, that we, _____
(Name and Address of Contractor)

as Principal and _____
(Surety Company)

a corporation incorporated under the laws of the State of _____ as Surety.
(Name of State)

are held and firmly bound unto _____ in
(Name of Contract Owner)
the full and just sum of _____ (\$_____) dollars lawful money of the United States of
America, to be paid to the above Owner or its assigns, to which payment well and truly to be made, we bind ourselves, our heirs,
executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above bounden Principal has entered into a contract with the above District, bearing even date herewith, for
the undertaking of certain obligations as therein set forth.

NOW, THEREFORE, the condition of this obligation is such that if the above bounden Principal, as Contractor, shall in all
respects comply with and faithfully perform the terms and conditions of said Contract, including the Specifications and conditions
referred to and made a part thereof, and such alterations as may be made in said specifications as therein set forth, then this Obligation
shall be void, but otherwise the same shall be and remain in full force, virtue and effect.

It is further provided that any alteration which may be made in the terms of the contract or its specifications with the express
approval of the District or the Principal to the other, shall not in any way release the Principal and the Surety or either of any of them,
their heirs, executors, administrators, successors or assigns from their liability hereunder, notice to the Surety of any such alteration or
forbearance being hereby waived.

IN WITNESS WHEREOF, the said Principal and Surety have duly executed this Bond under Seal, pursuant to due and legal
action authorizing the same to be done on _____.
(Date of Bond)

Attest/Witness: _____
PLACE SEAL HERE Contractor

Title: BY _____
Title:

Attest/Witness: _____
PLACE SEAL HERE Surety Company

Title: _____
Title:

NOTICE OF AWARD

To: _____

PROJECT Description: _____

The OWNER has considered the BID submitted by you on _____, 20__ (BID Date) for the above described WORK in response to its Advertisement for BIDS and Information for BIDDERS.

You are hereby notified that your BID has been accepted for items in the amount of \$_____.

You are required by the Information for BIDDERS to execute the Agreement and furnish the required CONTRACTOR's Contract BOND, if applicable, and Certificates of Insurance within 10 calendar days from the date of this notice to you.

If you fail to execute said Agreement and to furnish said BOND within 10 days from the date of this notice, said OWNER will be entitled to consider all your rights arising out of the OWNER's acceptance of your BID as abandoned and as a forfeiture of your BID guaranty. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this ____ day of _____, 20__.

Owner

By: _____

Name: _____

Title: _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by: _____ on this ____ day of _____, 20__.

By: _____

Name and Title: _____

cc: CONTRACTOR's Surety
Surety's Agent

NOTICE TO PROCEED

To: _____ Date: _____

PROJECT Description: _____

You are hereby notified to commence WORK in accordance with the Agreement dated _____, 20__, on or

after _____, 20__, and you are to complete the WORK within _____ consecutive calendar days thereafter.

The date of completion of all WORK is therefore _____, 20__.

Owner

By: _____

Name: _____

Title: _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO
PROCEED is hereby acknowledged

by _____
on this _____ day of _____, 20__.

By: _____

Name: _____

Title: _____

CONTRACT CHANGE ORDER

Contract No. _____

Date _____

Change Order No. _____

Project No. _____

To: (Contractor) _____

You are hereby requested to comply with the following changes from the contract plans and specifications:

ITEM NO.	DESCRIPTION OF CHANGES – QUANTITIES, UNIT, UNIT PRICES, CHANGE IN COMPLETION SCHEDULE, ETC.	DECREASE IN CONTRACT PRICE	INCREASE IN CONTRACT PRICE
(1)	(2)	(3)	(4)
	Change in contract price due to this change order	\$	\$
	Total decrease	\$	\$
	Total increase	\$	\$
	Difference between Columns (3) and (4)	\$	\$
	Net (increase) (decrease) contract price	\$	\$

The sum of \$_____ is hereby added to, deducted from, the total contract price and the total adjusted price to date thereby is \$_____.

The time provided for completion in the contract is unchanged, increased, decreased, by _____ calendar days. This document shall become an amendment to the contract and all provisions of the contract will apply hereto.

Accepted by:

Contractor

Date _____

Recommended by:

Architect/Engineer

Date _____

Approved by:

Chester Upland School District

Date _____

Note: Work performed under this change order prior to District concurrence is at owner's risk. District concurrence will be evidenced by signature of Engineer and Owner

004116 - BID FORM - STIPULATED SUM

1.1 BID INFORMATION

- A. Bidder: _____.
- B. Project Name: **Chester Upland School District Restroom Upgrades**
- C. Project Location:
1. Chester High School – 232 W. 9th Street, Chester, PA 19013
 2. STEM Academy Chester – 1100 W. 10th Street., Chester, PA 19013
 3. Main Elementary School – 704 Main Street, Upland, PA 19015
 4. Chester Upland School of the Arts – 501 W. 9th Street #1, Chester, PA 19013
- D. Owner: Chester Upland School District

1.2 CERTIFICATIONS AND BASE BID

- A. Base Bid, Contract: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by MG Engineering Associates, LLC, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:
1. _____ Dollars (\$_____).
 2. The above amount may be modified by amounts indicated by the Bidder on the attached Document 004322 "Unit Prices Form"

1.3 BID GUARANTEE

- A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety as specified within **10** days after a written Notice of Award, if offered within **60** days after receipt of bids, and on failure to do so agrees to forfeit to Owner the attached cash, cashier's check, certified check, U.S. money order, or bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Base Bid amount above:
1. _____ Dollars (\$_____).
- B. In the event Owner does not offer Notice of Award within the time limits stated above, Owner will return to the undersigned the cash, cashier's check, certified check, U.S. money order, or bid bond.

1.4 TIME OF COMPLETION

- A. The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to Proceed to be issued by Engineer, and shall fully complete the Work within 150 calendar days.

1.5 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:
1. Addendum No. 1, dated _____.
 2. Addendum No. 2, dated _____.
 3. Addendum No. 3, dated _____.
 4. Addendum No. 4, dated _____.

1.6 BID SUPPLEMENTS

- A. The following supplements are a part of this Bid Form and are attached hereto.
- B.
1. Bid Form Supplement - Unit Prices.
 2. Bid Form Supplement - Bid Bond Form (AIA Document A310-2010).

1.7 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed contractor, for the type of work proposed, in the Commonwealth of Pennsylvania, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

CHESTER UPLAND SCHOOL DISTRICT – RESTROOM UPGRADES
100% BID SET

1.8 SUBMISSION OF BID

- A. Respectfully submitted this ____ day of _____, 2022
- B. Submitted By: _____ (Name of bidding firm or corporation).
- C. Authorized Signature: _____ (Handwritten signature).
- D. Signed By: _____ (Type or print name).
- E. Title: _____ (Owner/Partner/President/Vice President).
- F. Witness By: _____ (Handwritten signature).
- G. Attest: _____ (Handwritten signature).
- H. By: _____ (Type or print name).
- I. Title: _____ (Corporate Secretary or Assistant Secretary).
- J. Street Address: _____.
- K. City, State, Zip: _____.
- L. Phone: _____.
- M. License No.: _____.
- N. Federal ID No.: _____ (Affix Corporate Seal Here).

END OF DOCUMENT 004116

004322 - UNIT PRICES FORM

1.1 BID INFORMATION

- A. Project Name: **Chester Upland School District**
- B. Project Location:
 - 1. Chester High School – 232 W. 9th Street, Chester, PA 19013
 - 2. STEM Academy Chester – 1100 W. 10th Street., Chester, PA 19013
 - 3. Main Elementary School – 704 Main Street, Upland, PA 19015
 - 4. Chester Upland School of the Arts – 501 W. 9th Street #1, Chester, PA 19013
- C. Owner: Chester Upland School District

1.2 BID FORM SUPPLEMENT

- A. This form is required to be attached to the Bid Form.
- B. The undersigned Bidder proposes the amounts below be added to or deducted from the Contract Sum on performance and measurement of the individual items of Work.
- C. If the unit price does not affect the Work of this Contract, the Bidder shall indicate "NOT APPLICABLE."

1.3 UNIT PRICES

- A. Unit-Price No. 1: Interior Lighting
 - 1. _____ dollars (\$_____) per unit.
- B. Unit-Price No. 2: Acoustical Ceiling Panels
 - 1. _____ dollars (\$_____) per unit.

1.4 SUBMISSION OF BID SUPPLEMENT

- A. Respectfully submitted this ____ day of _____, 2023
- B. Submitted By: _____ (Insert name of bidding firm or corporation).
- C. Authorized Signature: _____ (Handwritten signature).
- D. Signed By: _____ (Type or print name).
- E. Title: _____ (Owner/Partner/President/Vice President).

END OF DOCUMENT 004322

SECTION 006000 - PROJECT FORMS

1.1 FORM OF AGREEMENT AND GENERAL CONDITIONS

- A. The following form of Owner/Contractor Agreement and form of the General Conditions shall be used for Project:
 - 1. The General Conditions are included in the Project Manual
 - 2. The Supplementary Conditions for Project are separately prepared and included in the Project Manual.

1.2 ADMINISTRATIVE FORMS

- A. Administrative Forms: Additional administrative forms are specified in Division 01 General Requirements.
 - B. Copies of AIA standard forms may be obtained from the American Institute of Architects; www.aiacontractdocsaiacontracts.org; (800) 942-7732.
 - C. Preconstruction Forms:
 - 1. Form of Performance Bond and Labor and Material Bond: included in Project Manual
 - 2. Form of Certificate of Insurance: AIA Document G715-2017 "Supplemental Attachment for ACORD Certificate of Insurance 25."
 - D. Information and Modification Forms:
 - 1. Form for Requests for Information (RFIs): AIA Document G716-2004 "Request for Information (RFI)."
 - 2. Form of Request for Proposal: AIA Document G709-2018 "Proposal Request."
 - 3. Change Order Form: AIA Document G701-2017 "Change Order."
 - 4. Form of Architect's Memorandum for Minor Changes in the Work: AIA Document G710-2017 "Architect's Supplemental Instructions."
 - 5. Form of Change Directive: AIA Document G714-2017 "Construction Change Directive."
 - E. Payment Forms:
 - 1. Schedule of Values Form: AIA Document G703-1992 "Continuation Sheet."
 - 2. Payment Application: AIA Document G702-1992/703-1992 "Application and Certificate for Payment and Continuation Sheet."
 - 3. Form of Contractor's Affidavit: AIA Document G706-1994 "Contractor's Affidavit of Payment of Debts and Claims."
 - 4. Form of Affidavit of Release of Liens: AIA Document G706A-1994 "Contractor's Affidavit of Payment of Release of Liens."
 - 5. Form of Consent of Surety: AIA Document G707-1994 "Consent of Surety to Final Payment."
- END OF SECTION 006000

SUBCONTRACTOR DECLARATION FORM

Each prime contractor is required to submit a list of subcontractors it intends to use on the project.

Subcontractor	Business Address	Type of Work

Project Name

Prime Contractor

Signature

Title

Date

NONDISCRIMINATION CLAUSE

During the term of this contract, Contractor agrees as follows:

1. In the hiring of any employee(s) for the manufacture of supplies, performance of work, or any other activity required under the grant agreement or any subgrant agreement, contract, or subcontract, the Grantee, a subgrantee, a contractor, a subcontractor, or any person acting on behalf of the Grantee shall not discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of the *Pennsylvania Human Relations Act* (PHRA) and applicable federal laws, against any citizen of this Commonwealth who is qualified and available to perform the work to which the employment relates.
2. The Grantee, any subgrantee, contractor or any subcontractor or any person on their behalf shall not in any manner discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of the PHRA and applicable federal laws, against or intimidate any of its employees.
3. Neither the Grantee nor any subgrantee nor any contractor nor any subcontractor nor any person on their behalf shall in any manner discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of the PHRA and applicable federal laws, in the provision of services under the grant agreement, subgrant agreement, contract or subcontract.
4. Neither the Grantee nor any subgrantee nor any contractor nor any subcontractor nor any person on their behalf shall in any manner discriminate against employees by reason of participation in or decision to refrain from participating in labor activities protected under the *Public Employee Relations Act*, *Pennsylvania Labor Relations Act* or *National Labor Relations Act*, as applicable and to the extent determined by entities charged with such Acts' enforcement, and shall comply with any provision of law establishing organizations as employees' exclusive representatives.
5. The Grantee, any subgrantee, contractor or any subcontractor shall establish and maintain a written nondiscrimination and sexual harassment policy and shall inform their employees in writing of the policy. The policy must contain a provision that sexual harassment will not be tolerated and employees who practice it will be disciplined. Posting this Nondiscrimination/Sexual Harassment Clause conspicuously in easily-accessible and well-lighted places customarily frequented by employees and at or near where the grant services are performed, shall satisfy this requirement for employees with an established work site.
6. The Grantee, any subgrantee, contractor or any subcontractor shall not discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of the PHRA and applicable federal laws, against any subgrantee, contractor, subcontractor or supplier who is qualified to perform the work to which the grant relates.
7. The Grantee, and each subgrantee, contractor and subcontractor represents that it is presently in compliance with and will maintain compliance with all applicable federal, state, and local laws and regulations relating to nondiscrimination and sexual harassment. The Grantee and each subgrantee, contractor and subcontractor further represents that it has filed a Standard Form 100 Employer Information Report ("EEO-1") with the U.S. Equal Employment Opportunity Commission ("EEOC") and shall file an annual EEO-1 report with the EEOC as required for employers' subject to *Title VII of the Civil Rights Act of 1964*, as amended, that have 100 or more employees and employers that have federal government contracts or first-tier subcontracts and have 50 or more employees. The Grantee, any subgrantee, any contractor or any subcontractor shall, upon request and within the time periods requested by the Commonwealth, furnish all necessary employment documents and records, including EEO-1 reports, and permit access to their books, records, and accounts by the granting agency and the Bureau of Diversity, Inclusion and Small Business Opportunities for the purpose of ascertaining compliance with the provisions of this Nondiscrimination/Sexual Harassment Clause.

8. The Grantee, any subgrantee, contractor or any subcontractor shall include the provisions of this Nondiscrimination/Sexual Harassment Clause in every subgrant agreement, contract or subcontract so that those provisions applicable to subgrantees, contractors or subcontractors will be binding upon each subgrantee, contractor or subcontractor.

9. The Granter's and each subgrantee's, contractor's and subcontractor's obligations pursuant to these provisions are ongoing from and after the effective date of the grant agreement through the termination date thereof. Accordingly, the Grantee and each subgrantee, contractor and subcontractor shall have an obligation to inform the Commonwealth if, at any time during the term of the grant agreement, it becomes aware of any actions or occurrences that would result in violation of these provisions.

10. The Commonwealth may cancel or terminate the grant agreement and all money due or to become due under the grant agreement may be forfeited for a violation of the terms and conditions of this Nondiscrimination/Sexual Harassment Clause. In addition, the granting agency may proceed with debarment or suspension and may place the Grantee, subgrantee, contractor, or subcontractor in the Contractor Responsibility File.

CONTRACTOR _____ Date _____

CONFLICT OF INTEREST

Interest of Local Public Officials

No member of the governing body of the locality or entity and no other officer, employee, agent or public official of such locality, who exercises any functions or responsibilities in connection with the planning and carrying out of the program, shall have any personal financial interest, direct or indirect, in this contract; and the governing body contractor shall take appropriate steps to assure compliance.

Interest of Contractor and Employees

The Contractor covenants that he presently has no interest and shall not acquire interest, direct or indirect, in the study area or any parcels therein or any other interest which would conflict in any manner or degree with the performance of his services hereunder. The Contractor further covenants that in the performance of this Contract, no person having any such interest shall be employed.

RECORDS AND AUDITS

The Contractor shall maintain accounts and records, including personnel, property and financial records, adequate to identify and account for all costs pertaining to the Contract and such other records as may be deemed necessary by the Municipality and County to assure proper accounting for all project funds. These records will be made available for audit purposes to the Municipality and County or any authorized representative, and will be retained for three years after the close out of the project by the County unless stipulated otherwise by the County.

The undersigned contractor agrees to abide by the above provisions.

By: _____
Contractor

Date

AFFIDAVIT RE
ACCEPTING PROVISIONS OF THE WORKMEN'S COMPENSATION ACT

State of _____)
 _____)
 _____) ss:
 _____)
 County of _____)

being duly sworn according to law deposes and says that he/she/it has (they have) accepted the provisions of the Workmen's Compensation Act of 1916 of the Commonwealth of Pennsylvania, with its supplements and amendments, and has (have) insured his/her (their) liability thereunder in accordance with the terms of said Act with

(Surety Company)

(Type or Print) Contractor

BY _____
Signature

Sworn to and subscribed before me this _____ day of _____ A.D. 20__

My Commission Expires_____

BIDDER'S QUALIFICATIONS

All questions must be answered and the date given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The Bidder may submit additional information if he so desires.

1. Name of Bidder:
2. Permanent main office address:
3. When Organized:
4. If a corporation, where incorporated:
5. How many years have you been engaged in the contracting business under your present firm or trade name?
6. Contracts on hand: Schedule these showing amount of each contract and the appropriate anticipated dates of completion.
7. General character of work performed by your company:
8. Have you ever failed to complete any work awarded to you? If so, where and why.
9. Have you ever defaulted on a contract? If so, where and why.
10. List the more important projects recently completed by your company, stating the approximate cost for each and the month and year completed.
11. List your major equipment available for this contract:
12. List experience in construction work similar in importance to this project:
13. List background and experience of the principal members of your organization, including the officers:
14. List credit available: \$
15. List bank references:
16. Will you, upon request, fill out a detailed financial statement and furnish any other information which may be required by the Owner?
17. The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by the Owner in verification of the recitals comprising this Statement of Bidder's Qualifications.

Bidder: _____

By: _____

Title: _____

Dated this _____ day of _____, 20_____.

State of _____

County of _____ § _____

_____ being duly sworn deposes and says that he is _____ of
and that the answers to the foregoing questions and all statements therein contained are true and correct.

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

My commission expires: _____ Notary Public



COMMONWEALTH OF PENNSYLVANIA

PUBLIC WORKS EMPLOYMENT VERIFICATION FORM

Date _____

Business or Organization Name (Employer) _____

Address _____

City _____ State _____ Zip Code _____

☐ Contractor ☐ Subcontractor (check one)

Contracting Public Body _____

Contract/Project No _____

Project Description _____

Project Location _____

As a contractor/subcontractor for the above referenced public works contract, I hereby affirm that as of the above date, our company is in compliance with the Public Works Employment Verification Act ('the Act') through utilization of the federal E-Verify Program (EVP) operated by the United States Department of Homeland Security. To the best of my/our knowledge, all employees hired post January 1, 2013 are authorized to work in the United States.

It is also agreed to that all public works contractors/subcontractors will utilize the federal EVP to verify the employment eligibility of each new hire within five (5) business days of the employee start date throughout the duration of the public works contract. Documentation confirming the use of the federal EVP upon each new hire shall be maintained in the event of an investigation or audit.

I, _____, authorized representative of the company above, attest that the information contained in this verification form is true and correct and understand that the submission of false or misleading information in connection with the above verification shall be subject to sanctions provided by law.

Authorized Representative Signature

SECTION 011100 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Contract work includes restroom upgrades for four (4) schools within Chester Upland School District.
 - 1. Main Elementary School
 - a. Finish upgrades, new resinous flooring and base, lighting replacement, select fixture replacements, select cleaning and resealing of existing floor mounted fixtures, new toilet partitions and new washroom accessories throughout. Select demolition and construction of finishes and ceiling in annex classroom.
 - 2. STEM
 - a. Finish upgrades, new resinous flooring and base, lighting replacements, new faucets, new washroom accessories throughout, removal and reinstallation of existing toilet partitions.
 - 3. Chester High
 - a. Finish upgrades, new epoxy resinous flooring and base, lighting replacements, select feature removals and replacement, new faucets throughout, new toilet partitions, new washroom accessories. Miscellaneous repairs and replacements of flush valve access panels, stainless steel access panels, and flush escutcheons.
 - b. Reconfiguration of two grouped restrooms to be single user, selective removal of fixtures and partitions, installation of new hollow metal doors and new restroom type hardware.
 - 4. Chester Upland School of the Arts
 - a. Finish upgrades, new resinous flooring and base, lighting replacement, select fixture replacements, new toilet partitions and new washroom accessories throughout. Select demolition and construction of finishes and ceiling grouped restrooms. Select wall tile demolition and new ceramic tile. Relocations of piping from floor to chase wall for new sinks in Boys restrooms.
 - b. Reconfiguration of two grouped restrooms to be single user, selective removal of fixtures and partitions, installation of new hollow metal doors and new restroom type hardware.
- B. Section includes a summary of each contract, including responsibilities for coordination and temporary facilities and controls.
- C. Related Requirements:
 - 1. Section 013100 "Project Management and Coordination" for general coordination requirements.

1.3 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. Blocking, backing panels, sleeves, and metal fabrication supports for the work of each contract shall be provided.
 3. Furnishing of access panels for the work.
 4. Cutting and Patching provided for the work
 5. Through-penetration firestopping for the work.
 6. Contractors' Startup Construction Schedule: Within five working days after startup horizontal bar-chart-type construction schedules showing construction operations sequenced and coordinated with overall construction.
- B. Close-out Procedures: Contractor shall be responsible for:
- a. Preparation and submission of Project Record Documents (as-builts, record specifications, record shop drawings, etc.) for work completed.
 - b. Preparation and submission of operation and maintenance manuals.
 - c. Assembly and submission of extra materials and attic stock to Owner.
 - d. Preparation and submission of warranties.

1.4 GENERAL CONSTRUCTION CONTRACT

- A. Work of the General Construction Contract includes, but not limited to, the following:
1. General coordination of construction activities
 2. Coordinate sequencing and scheduling of the Work.
 3. Initial Coordination Meeting.
 4. Prepare Construction Schedule for entire Project.
 5. Provide photographic documentation.
 6. Interior finishes, interior specialties, and floor and ceiling finishes.
- B. Temporary facilities and controls in the General Construction Contract include, but are not limited to, the following:
1. Project identification and temporary signs.
 2. General waste disposal facilities.
 3. Pest control.
 4. Barricades, warning signs, and lights.
 5. Security enclosure and lockup.
 6. Plumbing fixtures.

7. Plumbing connections to existing systems
8. Interior lighting

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011200

SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
 - 1. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Section 014000 "Quality Requirements" for field testing by an independent testing agency.

1.3 DEFINITIONS

- A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the Part 3 "Schedule of Unit Prices" Article contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. 1: New Interior Lighting

1. Description: Replace existing lighting
2. Unit of Measurement: Each

B. Unit Price No. 2: Acoustical Ceiling Panels

1. Description: Existing Acoustical Ceiling Panel replacement with new to match existing.
In accordance with Division 9 Section Acoustical Ceiling Panels
2. Unit of Measurement: SQFT

END OF SECTION 012200

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

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

1.4 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. Substitution Request Form: Use form acceptable to Engineer.
 - 2. 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. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

- d. Samples, where applicable or requested.
 - e. Certificates and qualification data, where applicable or requested.
 - f. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
 - g. Cost information, including a proposal of change, if any, in the Contract Sum.
 - h. 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.
3. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Engineer 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 Engineer's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Engineer does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

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

1.6 PROCEDURES

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

1.7 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: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:
- a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Requested substitution will not adversely affect Contractor's construction schedule.
 - c. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - d. Requested substitution is compatible with other portions of the Work.

- e. Requested substitution has been coordinated with other portions of the Work.
 - f. Requested substitution provides specified warranty.
 - g. 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: Engineer will consider requests for substitution if received within **60** days after the Notice to Proceed Requests received after that time may be considered or rejected at discretion of Engineer.
1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:
- a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - 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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for 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.

1.3 MINOR CHANGES IN THE WORK

- A. Engineer will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710.

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Engineer 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 Engineer are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within 10 days, when not otherwise specified 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 Engineer.
- 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 Engineer.
- 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 Engineer

1.5 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Change Proposal Request, Engineer will issue a Change Order for signatures of Owner and Contractor on **AIA Document G701**

1.6 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: **Engineer** may issue a Construction Change Directive on **AIA Document G714**. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements 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.
 - 2. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 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.

1.4 SCHEDULE OF VALUES

- A. Submit the schedule of values to Engineer at earliest possible date, but no later than 10 days before the date scheduled for submittal of initial Applications for Payment.
 - 1. 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.
 - 2. Identification: Include the following Project identification on the schedule of values:
 - 3. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.

- 1) Labor.
- 2) Materials.
- 3) Equipment.
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.
5. Overhead Costs, Proportional Distribution: Include total cost and proportionate share of general overhead and profit for each line item.
6. 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.

1.5 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 Engineer, 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. Payment Application Times: Submit Application for Payment to Engineer by the 15 of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.
 1. Submit draft copy of Application for Payment **seven** days prior to due date for review by Engineer.
- D. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
 1. Other Application for Payment forms proposed by the Contractor may be acceptable to Engineer and Owner. Submit forms for approval with initial submittal of schedule of values.
- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. **Engineer** 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.

- F. 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.
- G. Transmittal: Submit 1 signed and notarized original copies of each Application for Payment to **Engineer** electronically. 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.
- 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. Products list (preliminary if not final).
 5. Sustainable design action plans, including preliminary project materials cost data.
 6. Schedule of unit prices.
 7. Submittal schedule (preliminary if not final).
 8. List of Contractor's staff assignments.
 9. List of Contractor's principal consultants.
 10. Copies of building permits.
 11. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 12. Initial progress report.
 13. Report of preconstruction conference.
 14. Certificates of insurance and insurance policies.
 15. Performance and payment bonds.
 16. Data needed to acquire Owner's insurance.
- I. Application for Payment at Substantial Completion: After Engineer 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. Proof that taxes, fees, and similar obligations are paid.
 11. Waivers and releases.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. RFIs.
 - 4. Digital project management procedures.
 - 5. Project meetings.
- B. Related Requirements:
 - 1. Section 011200 "Summary" for a description of the work
 - 2. Section 013200 "Construction Progress Documentation"
 - 3. Section 017300 "Execution"
 - 4. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

- A. BIM: Building Information Modeling.
- B. RFI: Request for Information. Request from Owner, Engineer, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, 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 built facility. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.
1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and scheduled activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's construction schedule.
 2. Preparation of the schedule of values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Preinstallation conferences.
 7. Project closeout activities.
 8. Startup and adjustment of systems.

1.6 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. Engineer will return without response those RFIs submitted to Engineer 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 Engineer
5. Engineer'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: Software-generated form with substantially the same content as indicated above, acceptable to Engineer.

1. Attachments shall be electronic files in PDF format.

D. Engineer's Action: Engineer will review each RFI, determine action required, and respond. Allow ten days for Engineer's response for each RFI. RFIs received by Engineer 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 Engineer's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
2. Engineer's action may include a request for additional information, in which case Engineer's time for response will date from time of receipt by Engineer of additional information.
3. Engineer'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 Engineer 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.
 1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Engineer
 4. RFI number, including RFIs that were returned without action or withdrawn.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Engineer'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 Engineer's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Engineer within **seven** days if Contractor disagrees with response.

1.7 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 Engineer 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, Engineer, within **three** days of the meeting.
- B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Engineer, but no later than 15 days after execution of the Agreement.
 1. 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. Procedures for processing field decisions and Change Orders.
 - h. Procedures for RFIs.
 - i. Procedures for testing and inspecting.
 - j. Procedures for processing Applications for Payment.
 - k. Distribution of the Contract Documents.
 - l. Submittal procedures.

- m. Project closeout requirements and sustainable design certification procedures.
 - n. Construction waste management.
 - o. Construction operations and sustainable design requirements and restrictions.
 - p. Preparation of Record Documents.
 - q. Use of the premises
 - r. Work restrictions.
 - s. Working hours.
 - t. Owner's occupancy requirements.
 - u. Responsibility for temporary facilities and controls.
 - v. Procedures for moisture and mold control.
 - w. Procedures for disruptions and shutdowns.
 - x. Construction waste management and recycling.
 - y. Parking availability.
 - z. Office, work, and storage areas.
 - aa. Equipment deliveries and priorities.
 - bb. First aid.
 - cc. Security.
 - dd. Progress cleaning.
2. 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. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 - 2. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
- D. Project Closeout Conference: **Schedule and conduct** a project closeout conference, at a time convenient to Owner and Engineer, 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, Owner's Commissioning Authority, Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of Record Documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Submittal of written warranties.
 - d. Requirements for delivery of material samples, attic stock, and spare parts.
 - e. Preparation of Contractor's punch list.

- f. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - g. Submittal procedures.
 - h. Coordination of separate contracts.
 - i. Owner's partial occupancy requirements.
 - j. Installation of Owner's furniture, fixtures, and equipment.
 - k. 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, Owner's Commissioning Authority and Engineer, 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) Status of submittals.
 - 2) Deliveries.
 - 3) Access.
 - 4) Site use.
 - 5) Temporary facilities and controls.
 - 6) Progress cleaning.
 - 7) Quality and work standards.
 - 8) Status of correction of deficient items.
 - 9) Field observations.
 - 10) Status of RFIs.
 - 11) Status of Proposal Requests.
 - 12) Pending changes.
 - 13) Status of Change Orders.
 - 14) Pending claims and disputes.
 - 15) 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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Concealed Work photographs.
 - 3. Periodic construction photographs.
 - 4. Final Completion construction photographs.
- B. Related Requirements:
 - 1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.

1.3 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**. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files within 5 days of taking photographs.
 - 1. Submit photos **by uploading to project management site**. Include copy of key plan indicating each photograph's location and direction.
 - 2. Identification: Provide the following information with each image description **in web-based Project management site**:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Engineer
 - 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.

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 **Engineer**.
 - 1. Flag excavation areas before taking construction photographs.
 - 2. Take 5 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.
- D. Periodic Construction Photographs: Take **20** photographs **weekly**. Select vantage points to show status of construction and progress since last photographs were taken.
- E. Final Completion Construction Photographs: Take **50** photographs after date of Substantial Completion for submission as Project Record Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

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 013100 "Project Management and Coordination"
2. Section 013200 "Construction Progress Documentation" f
3. Section 013233 "Photographic Documentation"
4. Section 014000 "Quality Requirements"
5. Section 017700 "Closeout Procedures"
6. Section 017839 "Project Record Documents"

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Engineer'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 Engineer'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 Engineer 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.
 - a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.
 2. 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 Engineer's final release or approval.

1.4 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

- 1. Project name.
- 2. Date.
- 3. Name of Engineer.
- 4. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
- 5. Category and type of submittal.
- 6. Submittal purpose and description.
- 7. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
- 8. Drawing number and detail references, as appropriate.
- 9. Indication of full or partial submittal.
- 10. Location(s) where product is to be installed, as appropriate.
- 11. Other necessary identification.
- 12. Remarks.
- 13. Signature of transmitter.

B. Options: Identify options requiring selection by Engineer.

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 Engineer 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. Email: Prepare submittals as PDF package and transmit to Engineer by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Engineer.

- a. Engineer will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.
2. 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. Engineer 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 Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
 4. Sequential Review: Where sequential review of submittals by Engineer's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
- 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 Engineer'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 Engineer's and Construction Manager'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.
 - 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.
- 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 **one** full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Engineer, will return submittal with options selected.
6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit **three** sets of Samples. Engineer will retain **two** Sample sets; remainder will be returned.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least **three** sets of paired units that show approximate limits of variations.

- 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 Engineers 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 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 Engineer.
- B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp, and 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. Engineer will not review submittals received from Contractor that do not have Contractor's review and approval.

1.8 ENGINEER'S REVIEW

- A. Action Submittals: Engineer will review each submittal, indicate corrections or revisions required.
 1. PDF Submittals: Engineer will indicate, via markup on each submittal, the appropriate action.
 - 1) APPROVED: The work involved may proceed, and no further submission is required.
 - 2) APPROVED AS NOTED: The work involved may proceed incorporating comments. Annotations do not authorize changes to Contract Sum.
 - 3) REVISE AND RESUBMIT: The work involved may not proceed. Submittal must be corrected and resubmitted.

- 4) REJECTED: The submittal is not in accordance with the Contract Documents, and a completely new submittal is required
2. Submittals by Web-Based Project Management Software: Engineer will indicate, on Project management software website, the appropriate action.
 - a. Actions taken by indication on Project management software website have the following meanings:
 - 1) APPROVED: The work involved may proceed, and no further submission is required.
 - 2) APPROVED AS NOTED: The work involved may proceed incorporating comments. Annotations do not authorize changes to Contract Sum.
 - 3) REVISE AND RESUBMIT: The work involved may not proceed. Submittal must be corrected and resubmitted.
 - 4) REJECTED: The submittal is not in accordance with the Contract Documents, and a completely new submittal is required
 - B. Informational Submittals: Engineer will review each submittal and will not return it, or will return it if it does not comply with requirements. Engineer 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 Engineer.
 - D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
 - E. Submittals not required by the Contract Documents will be returned by Engineer without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and 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 Engineer, Owner, **Commissioning Authority**, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 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. 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) according to 29 CFR 1910.7, by a testing agency accredited according to 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 Engineer.

1.4 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. 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.
 2. Primary wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.
- D. 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.
- 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.

1.5 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within **10** days of **Notice to Proceed**, and not less than five days prior to preconstruction conference. Submit in format acceptable to Engineer. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities and to coordinate Owner's quality-assurance and quality-control activities. Coordinate with Contractor's Construction Schedule.
- 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. 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.
- D. Monitoring and Documentation: Maintain testing and inspection reports, including log of approved and rejected results. Include Work Engineer 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.

1.6 REPORTS AND DOCUMENTS

- A. 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.

1.7 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.

1.8 QUALITY CONTROL

- A. 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. Engage a qualified testing agency to perform quality-control services.
 3. Notify testing agencies at least **24** hours in advance of time when Work that requires testing or inspection will be performed.
 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- B. 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. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 6. Security and protection for samples and for testing and inspection equipment at Project site.
- C. 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 (Not Used)

END OF SECTION 014000

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes 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.

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. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed.
- F. 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.

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.

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. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil (0.25-mm) minimum thickness, with flame-spread rating of 15 or less in accordance with ASTM E84 and passing NFPA 701 Test Method 2.
- B. Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats, minimum 36 by 60 inches (914 by 1524 mm).

2.2 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. General: Install temporary service or connect to existing service.
- C. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project Area. Provide temporary, directional signs for construction personnel and visitors.
- D. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- E. Waste Disposal Facilities: 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."

- F. 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.

3.2 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. 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.
- D. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
 - 1. Provide overhead decking, protective enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
 - 2. Paint and maintain appearance of walkway for duration of the Work.
- E. Temporary Enclosures: Construct dustproof partitions with gypsum wallboard, with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
 - 1. Construct dustproof partitions with two layers of 6-mil (0.14-mm) polyethylene sheet on each side. Cover floor with two layers of 6-mil (0.14-mm) polyethylene sheet, extending sheets 18 inches (460 mm) up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant-treated plywood.
 - 2. Provide walk-off mats at each entrance through temporary partition.
- F. Controlled Construction Period: After completing and sealing of the building enclosure but

3.3 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. 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. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for Contractor requirements related to Owner-furnished products.
 - 2. Section 012500 "Substitution Procedures" for requests for substitutions.
 - 3. Section 01770 "Closeout Procedures" for submitting warranties.

1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. 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 indicated otherwise.
 - 3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in Part 2 "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 basis-of-design product establish salient characteristics of products.

1. Evaluation of 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.
 - 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 Part 2 "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.
- 1.4 QUALITY ASSURANCE
- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
 - 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, Engineer will determine which products shall 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 not conspicuous.

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 -22, and 26 for additional equipment identification requirements.

1.5 COORDINATION

- A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to determine compliance with the Contract Documents and 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.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the 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 the 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," Engineer will make selection.
 4. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
 5. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

- a. Submit additional documentation required by Engineer in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by the Engineer, whose determination is final.
- B. Product Selection Procedures:
1. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
 - a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."
 2. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience **will** be considered
 - a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."
 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 Engineer's sample," provide a product that complies with requirements and matches Engineer's sample. Engineer'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 Engineer from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Engineer will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.
- E. Sustainable Product Selection: Where Specifications require product to meet sustainable product characteristics, select products complying with indicated requirements. Comply with requirements in Division 01 sustainability requirements Section and individual Specification Sections.

1. Select products for which sustainable design documentation submittals are available from manufacturer.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration of Comparable Products: Engineer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Engineer 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 Engineers and owners, if requested.
 5. Samples, if requested.
- B. Engineer's Action on Comparable Products Submittal: If necessary, Engineer will request additional information or documentation for evaluation, as specified in Section 013300 "Submittal Procedures."
 1. Form of Approval of Submittal: As specified in Section 013300 "Submittal Procedures."
 2. Use product specified if Engineer does not issue a decision on use of a comparable product request within time allocated.
- C. Submittal Requirements, Two-Step Process: Approval by the Engineer 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

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:
 - 1. Installation of the Work.
 - 2. Cutting and patching.
 - 3. Coordination of Owner-installed products.
 - 4. Progress cleaning.
 - 5. Starting and adjusting.
 - 6. Protection of installed construction.
 - 7. Correction of the Work.
- B. Related Requirements:
 - 1. 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.

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 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. 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.
- 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.
 - 1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.
- 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 Engineer 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.
 - 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. 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.
- B. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility

appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

3.3 INSTALLATION

- A. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- B. Install products at the time and under conditions that will ensure satisfactory results as judged by Engineer. Maintain conditions required for product performance until Substantial Completion.
- C. 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.
- D. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.
- E. 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.
- F. 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.
- G. 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 Engineer. Fit exposed connections together to form hairline joints.

3.4 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.

- 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. 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 **minimize** interruption to occupied areas.
- F. 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.
- G. 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 Engineer. 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.
- H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.5 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. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. 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.
- C. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- D. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- E. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- F. 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.
- G. 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.
- H. 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.

3.6 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

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
- 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 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.

1.3 DEFINITIONS

- A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Engineer's use prior to Engineer's inspection, to determine if the Work is substantially complete.

1.4 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.

1.5 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.

- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest-control inspection.

1.6 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 individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 3. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by **Engineer**. Label with manufacturer's name and model number.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of **10** days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Advise Owner of pending insurance changeover requirements.
 - 2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 - 3. Complete startup and testing of systems and equipment.
 - 4. Perform preventive maintenance on equipment used prior to Substantial Completion.
 - 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
 - 6. Advise Owner of changeover in 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 **10** days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer 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 Engineer, 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 Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.
5. Submit Final Completion photographic documentation.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Engineer, will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer 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, 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 Engineer,
 - d. Name of Contractor.

- e. Page number.
- 4. Submit list of incomplete items in the following format:
 - a. MS Excel Electronic File: Engineer, will return annotated file.
 - b. 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 Engineer 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. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
- C. 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 on digital media acceptable to Engineer, by uploading to web-based project software site.
- D. 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 (215-by-280-mm) paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- E. 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.
 - a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
 - b. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - c. Remove snow and ice to provide safe access to building.
 - d. Clean flooring, removing debris, dirt, and staining; clean according to manufacturer's recommendations.
 - e. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - f. 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.
 - g. Remove labels that are not permanent.
 - h. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - i. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - j. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - k. Clean ducts, blowers, and coils, if units were operated without filters during construction or that display contamination with particulate matter on inspection.
 - l. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
 - m. Clean strainers.
 - n. Leave Project clean and ready for occupancy.
- C. Construction Waste Disposal: Comply with waste-disposal requirements in Section 015000 "Temporary Facilities and Controls." Section 017419 "Construction Waste Management and Disposal."

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations required by Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for preparing, 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.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

- A. 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. Engineer **and Commissioning Authority** 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 Engineer, by uploading to web-based project software site. Enable reviewer comments on draft submittals.

2. .

- C. Initial Manual Submittal: Submit draft copy of each manual at least **30** days before commencing demonstration and training. Engineer **and Commissioning Authority** will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least **15** days before commencing demonstration and training. Engineer **and Commissioning Authority** will return copy with comments.
 - 1. Correct or revise each manual to comply with Engineer's **and Commissioning Authority's** comments. Submit copies of each corrected manual within **15** days of receipt of Engineer's **and Commissioning Authority's** comments and prior to commencing demonstration and training.
- E. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.5 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.

1.6 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. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.

4. Material and chemical composition.
 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
 2. Types of cleaning agents to be used and methods of cleaning.
 3. List of cleaning agents and methods of cleaning detrimental to product.
 4. Schedule for routine cleaning and maintenance.
 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record specifications.
 - 3. Record Product Data.
 - 4. Miscellaneous record submittals.
- B. Related Requirements:
 - 1. Section 017700 "Closeout Procedures" for general closeout procedures.
 - 2. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. : Submit copies of Record Drawings as follows:
 - a. Initial Submittal:
 - 1) Submit PDF electronic files of scanned record prints
 - 2) Submit Record Digital Data Files
 - 3) Engineer will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - b. Final Submittal:
 - 1) Submit PDF electronic files of scanned Record Prints
 - 2) Print each drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit **annotated PDF electronic files** of Project's Specifications, including addenda and Contract modifications.
- C. Record Product Data: Submit **annotated PDF electronic files and directories** of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
- D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit **annotated PDF electronic files and directories** of each submittal.
- E. Reports: Submit written report **weekly** indicating items incorporated into Project Record Documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

1.4 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
- B. Format: Submit record specifications as **annotated PDF electronic file**

1.5 RECORD PRODUCT DATA

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.
- B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in
- C. Format: Submit Record Product Data as **annotated PDF electronic file**.
 1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017839

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Demolition and removal of selected portions of building.
 - 2. Salvage of existing items to be reused or recycled.

- B. Related Requirements:

- 1. Section 011000 "Summary" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
 - 2. Section 017300 "Execution" for cutting and patching procedures.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse
- 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: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.5 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. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- C. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.6 WARRANTY

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 ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video.
 - 1. Comply with requirements specified in Section 013233 "Photographic Documentation."
 - 2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
 - 1. Disconnect, demolish, and remove plumbing, components indicated in schedule to be removed.
 - a. Equipment to Be Removed: Disconnect and cap services and remove equipment.

- b. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.

3.3 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 - 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- B. Remove temporary barricades and protections where hazards no longer exist.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. 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.
 - 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 3. 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.
 - 4. Maintain fire watch during and for at least 2 hours after flame-cutting operations.
 - 5. Maintain adequate ventilation when using cutting torches.
 - 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 - 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 9. Dispose of demolished items and materials promptly.

- 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.
- C. Removed and Salvaged Items:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area **on-site**
 - 5. Protect items from damage during transport and storage.
- D. 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.
- E. 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 during selective demolition **and cleaned** and reinstalled in their original locations after selective demolition operations are complete.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site
 - 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.

3.6 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 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Nonstaining silicone joint sealants.
 - 2. Urethane joint sealants.
 - 3. Mildew-resistant joint sealants.
 - 4. Latex joint sealants.

1.2 ACTION SUBMITTALS

- A. Product Data:
 - 1. 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. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

1.3 INFORMATIONAL SUBMITTALS

- A. Test and Evaluation Reports:
 - 1. Preconstruction Laboratory Test Schedule: Include the following information for each joint sealant and substrate material to be tested:
 - a. Joint-sealant location and designation.
 - b. Manufacturer and product name.
 - c. Type of substrate material.
 - d. Proposed test.
 - e. Number of samples required.
 - 2. Preconstruction Laboratory Test Reports: For each joint sealant and substrate material to be tested from sealant manufacturer, indicating the following:
 - a. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - b. Interpretation of test results and written recommendations for primers and substrate preparation are needed for adhesion.

3. Preconstruction Field-Adhesion-Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.

B. Sample warranties.

1.4 CLOSEOUT SUBMITTALS

A. Warranty Documentation:

1. Manufacturers' special warranties.
2. Installer's special warranties.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Installers: Authorized representative who is trained and approved by manufacturer.
2. Testing Agency: 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.

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. VOC Content: Verify sealants and sealant primers comply with the following:
 - 1. Architectural sealants have a VOC content of 250 g/L or less.
 - 2. Sealants and sealant primers for nonporous substrates have a VOC content of 250 g/L or less.
 - 3. Sealants and sealant primers for porous substrates have a VOC content of 775 g/L or less.
 - 4. Verify sealant complies 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."
- C. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.3 URETHANE JOINT SEALANTS

- A. Urethane, S, P, 25, T, NT: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type S, Grade P, Class 25, Uses T and 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; Dyna Tred.
- B. Urethane, M, NS, 50, NT: Multicomponent, nonsag, plus 50 percent and minus 50 percent movement capability nontraffic-use, urethane joint sealant; ASTM C920, Type M, Grade NS, Class 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. Pecora Corporation; Dynatrol II.

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, 50, NT: Mildew-resistant, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 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. Pecora Corporation; 898 NST.

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. Tremco Incorporated; Tremflex 834.

2.6 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

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. Adfast.

- b. Alcot Plastics Ltd.

- c. Construction Foam Products; a division of Nomaco, Inc.

- B. Cylindrical Sealant Backings: ASTM C1330, Type B (bicellular material with a surface skin) or any as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.7 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.
 - c. Unglazed surfaces of ceramic tile.
 - 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.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.
- 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 according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - 3. Provide concave joint profile in accordance with Figure 8A in ASTM C1193 unless otherwise indicated.
 - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 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.

3.5 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.
- B. Interior joints in horizontal traffic surfaces:
 - 1. Joint Locations:
 - a. Control and expansion joints in tile flooring.
 - 2. Joint Sealant: Urethane, S, P, 50, T.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- C. Interior joints in vertical surfaces and horizontal nontraffic surfaces:
 - 1. Joint Locations:
 - a. Tile control and expansion joints.
 - 2. Joint Sealant: Urethane, M, NS, 50, NT.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- D. Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces:
 - 1. Joint Locations:
 - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - b. Tile control and expansion joints where indicated.
 - c. Other joints as indicated on Drawings.
 - 2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Standard and custom hollow metal doors and frames.
 - 2. Hardware sets

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.
- B. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.

1.4 QUALITY ASSURANCE

- A. Quality Standard: In addition to requirements specified, furnish SDI-Certified manufacturer products that comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for Standard Steel Doors and Frames".

1.5 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.6 COORDINATION

- A. Coordinate installation of anchorages 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.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
- B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide steel doors and frames from a SDI Certified manufacturer:
 - 1. CECO Door Products (C).
 - 2. Curries Company (CU).
 - 3. Pioneer Industries (PI).

2.2 PERFORMANCE REQUIREMENTS

2.3 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.
- C. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

2.4 HOLLOW METAL DOORS

- A. General: Provide 1-3/4 inch doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8 and ANSI/NAAMM HMMA 867.
- B. Interior Doors: Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A 1008/A 1008M. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
 - 1. Design: Flush panel.
 - 2. Level/Model: Level 2 and Physical Performance Level B (Heavy Duty), Minimum 18 gauge (0.042-inch - 1.0-mm) thick steel, Model 2.

3. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet.
4. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
5. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

C. Manufacturers Basis of Design:

1. Curries Company (CU) - Polystyrene Core - 707 Series.

2.5 HOLLOW METAL FRAMES

- A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.
- B. Interior Frames: Fabricated from cold-rolled steel sheet that complies with ASTM A 1008/A 1008M.
 1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
 2. Frames: Minimum 16 gauge (0.053-inch -1.3-mm) thick steel sheet.
 3. Manufacturers Basis of Design:
 - a. Curries Company (CU) - CM Series.
 - b. Curries Company (CU) - M Series.
- C. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

2.6 FRAME ANCHORS

- A. Jamb Anchors:
 1. Stud Wall Type: Designed to engage stud and not less than 0.042 inch thick.
- B. Floor Anchors: Floor anchors to be provided at each jamb, formed from A60 metallic coated material, not less than 0.042 inches thick.
- C. Mortar Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.7 FABRICATION

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.
- B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.

C. Hollow Metal Frames:

1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
 - a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.
2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
3. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
4. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Three anchors per jamb up to 60 inches high.
 - 2) Four anchors per jamb from 60 to 90 inches high.
 - 3) Five anchors per jamb from 90 to 96 inches high.
 - 4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
 - 5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.

D. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."

1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.
3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.

2.8 STEEL FINISHES

A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 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.
- B. Prior to installation, adjust and securely brace welded hollow metal frames for square, level, twist, and plumb condition.
- C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."
- D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.
 - 1. Set frames accurately in position, plumbed, leveled, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.
 - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
 - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
 - 3. Solidly pack mineral-fiber insulation inside frames.
 - 4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar.
 - 5. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.

6. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.
- C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
 1. Non-Fire-Rated Standard Steel Doors:
 - a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
 - c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
 - d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow metal work immediately after installation.
- C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

3.5 DOOR HARDWARE

- A. 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.
- B. The door 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.
- C. NEW SINGLE USER RESTROOM DOORS AND DOORS TO RECONFIGURED SINGLE USER RESTROOMS

1. SCHEDULE

3 Hinge, Full Mortise	TA2714	US15 MK
1 Privacy Lock	LB V21 8265 LNND	US15 SA
1 Surface Closer	351 O	EN SA
1 Kick Plate	K1050 10" high CSK BEV	US15 RO
1 Wall Stop	406 / 409	US32D RO
3 Silencer	608 / 609	RO
1 Coat Hook	796	US26D RO

3.6

END OF SECTION 081113

SECTION 083113 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Access doors and frames.
 - 2. Fire-rated wall access doors.

PART 2 - PRODUCTS

2.1 ACCESS DOORS AND FRAMES

- A. Manufacturers
 - 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. ACUDOR Products, Inc.
 - b. Babcock-Davis.
 - c. J. L. Industries, Inc.; Activar Construction Products Group, Inc.
- B. Flush Valve Access Panels with Exposed Flanges:
 - 1. Description: Panel face flush with frame, with exposed flange and concealed hinge.
 - 2. Size: 15-inch by 15-inch minimum or 12 inch by 12 inch Minimum – verify in field
 - 3. Stainless Steel Sheet for Door: Nominal 0.060 inch, 16 gage, factory primed.
 - 4. Frame Material: Same material, thickness, and finish as door.
- C. Flush Access Doors with Exposed Flanges:
 - 1. Description: Face of door flush with frame, with exposed flange and concealed hinge.
 - 2. Optional Features: Gasketing, Piano hinges, Masonry anchors.
 - 3. Locations: Wall.
 - 4. Door Size: 16-inch by 16-inch minimum.
 - 5. Stainless Steel Sheet for Door: Nominal 0.060 inch, 16 gage, factory primed.
 - 6. Frame Material: Same material, thickness, and finish as door.
 - 7. Latch and Lock: Cam latch, key operated.

2.2 MATERIALS

- A. Steel Sheet: ASTM A 366/A 366M commercial-quality, cold-rolled steel sheet with baked-on, rust-inhibitive primer.
- B. Zinc-Coated Steel Sheet: ASTM A 591/A 591M, Electrolytic zinc-coated steel sheet with Class C coating and phosphate treatment to prepare surface for painting.
- C. Frame Anchors: Same material as door face.
- D. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A153/A153M or ASTM F2329.

2.3 FABRICATION

- A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.
- B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish mounting holes, attachment devices and fasteners of type required to secure access doors to types of supports indicated.

2.4 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Painted Finishes: Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
 - 1. Factory Primed: Apply manufacturer's standard, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Coordinate access door sizing with type and locations of equipment or components as installed.

3.2 INSTALLATION

- A. Comply with manufacturer's written instructions for installing access doors and frames.
- B. Install doors at locations to give minimum manufacturer recommended clearance for access and repair to equipment and components.

3.3 ADJUSTING

- A. Adjust doors and hardware, after installation, for proper operation.
- B. Remove and replace panels or frames that are warped, bowed, or otherwise damaged.

END OF SECTION 083113

SECTION 090190.52 - MAINTENANCE REPAINTING

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 maintenance repainting as follows:

- 1. Removing existing paint.
- 2. Patching substrates.
- 3. Repainting

- B. Related Requirements:

1.3 DEFINITIONS

- A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D523.
- B. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.
- C. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.
- D. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D523.
- E. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D523.
- F. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D523.
- G. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D523.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at each School

1.5 SEQUENCING AND SCHEDULING

- A. Perform maintenance repainting in the following sequence, which includes work specified in this and other Sections:
1. Dismantle existing surface-mounted objects and hardware except items indicated to remain in place. Tag items with location identification and protect.
 2. Verify that temporary protections have been installed.
 3. Examine condition of surfaces to be painted.
 4. Remove existing paint to the degree required for each substrate and surface condition of existing paint.
 5. Apply paint system.
 6. Reinstall dismantled surface-mounted objects and hardware unless otherwise indicated.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.
1. Include recommendations for product application and use.
 2. Include test data substantiating that products comply with requirements.
- B. Samples: For each type of paint system and each pattern, color, and gloss;
1. Include stepped Samples defining each separate coat, including fillers and primers. Resubmit until each required sheen, color, and texture is achieved.
 2. Sample Size:
 - a. Painted Surfaces: **4-by-8-inch (100-by-200-mm)** Samples for each color and material, on hardboard.
- C. Product List: For each paint product indicated, include the following:
1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 2. VOC content.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra paint materials, from the same production run, that match products applied and that are packaged with protective covering for storage and identified with labels describing contents, including material, finish, source, and location on building.
1. Quantity: Furnish Owner with an additional 3 percent, but not less than **1 gal. (3.8 L)** or one case, as appropriate, of each material and color applied.

1.8 QUALITY ASSURANCE

- A. Mockups: Prepare mockups of maintenance repainting processes for each type of coating system and substrate indicated and each color and finish required to demonstrate aesthetic effects and to set quality standards for materials and execution. Duplicate appearance of approved Sample submittals.
1. Locate mockups **locations that enable viewing under same conditions as the completed Work**
 2. Coating Mockups: **Two** surfaces of at least **100 sq. ft. (9 sq. m)** to represent surfaces and conditions for application of each type of coating system under same conditions as the completed Work.
 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.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than **45 deg F (7 deg C)**.
1. Maintain containers in clean condition, free of foreign materials and residue.
 2. Remove rags and waste daily.

1.10 FIELD CONDITIONS

- A. Weather Limitations: Proceed with maintenance repainting only when existing and forecasted weather conditions are within the environmental limits set by each manufacturer's written instructions and specified requirements.
- B. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between **50 and 95 deg F (10 and 35 deg C)**.
- C. Do not apply paint in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than **5 deg F (3 deg C)** above the dew point; or to damp or wet surfaces.
1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer for surface preparation and during paint application and drying periods.

PART 2 - PRODUCTS

2.1 PREPARATORY CLEANING MATERIALS

- A. Water: Potable.

- B. Hot Water: Water heated to a temperature of 140 to 160 deg F (60 to 71 deg C).
- C. Detergent Solution: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium pyrophosphate (TSPP), 1/2 cup (125 mL) of laundry detergent that contains no ammonia, 5 quarts (5 L) of 5 percent sodium hypochlorite bleach, and 15 quarts (15 L) of warm water for every 5 gal. (20 L) of solution required.
- D. Abrasives for Ferrous Metal Cleaning: Aluminum oxide paper, emery paper, fine steel wool, steel scrapers, and steel-wire brushes of various sizes.
- E. Rust Remover: Manufacturer's standard phosphoric acid-based gel formulation, also called "naval jelly," for removing corrosion from iron and steel.

2.2 PAINT, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each paint system that are 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 manufacturers of topcoat for use in paint system and on substrate indicated.
- B. Colors: **As indicated with each paint system in painting schedule..**

2.3 PAINT MATERIAL MANUFACTURERS

- A. Basis of Design : Sherwin Williams

2.4 PAINT MATERIALS

- A. Primers and Sealers:
 - 1. Primer Sealer, Latex, Interior:[**MPI #50.**]
 - 2. Primer, Stain Blocking, Water Based:[**MPI #137.**]
- B. Metal Primers:
 - 1. Primer, Metal, Surface Tolerant:[**MPI #23.**]
- C. Water-Based Paints:
 - 1. Latex, Interior, Institutional Low Odor/VOC, Flat (Gloss Level 1):[**MPI #143.**]
 - 2. Latex, Interior, Institutional Low Odor/VOC (Gloss Level 2):[**MPI #144.**]
 - 3. Latex, Interior, Institutional Low Odor/VOC (Gloss Level 3):[**MPI #145.**]

4. Latex, Interior, Institutional Low Odor/VOC (Gloss Level 4):[**MPI #146.**]
5. Latex, Interior, Institutional Low Odor/VOC, Semigloss (Gloss Level 5):[**MPI #147.**]

2.5 PATCHING MATERIALS

- A. Wood-Patching Compound: Two-part, epoxy-resin, wood-patching compound; knife-grade formulation as recommended in writing by manufacturer for type of wood repair indicated, tooling time required for the detail of work, and site conditions. Compound shall be designed for filling voids in damaged wood materials that have deteriorated from weathering and decay. Compound shall be capable of filling deep holes and spreading to feather edge.
- B. Metal-Patching Compound: Two-part, polyester-resin, metal-patching compound; knife-grade formulation as recommended in writing by manufacturer for type of metal repair indicated, tooling time required for the detail of work, and site conditions. Compound shall be produced for filling metal that has deteriorated from corrosion. Filler shall be capable of filling deep holes and spreading to feather edge.
- C. Cementitious Patching Compounds: Cementitious patching compounds and repair materials specifically manufactured for filling cementitious substrates and for sanding or tooling prior to repainting; formulation as recommended in writing by manufacturer for type of cementitious substrate indicated, exposure to weather and traffic, the detail of work, and site conditions.
- D. Gypsum-Plaster Patching Compound: Finish coat plaster and bonding compound according to ASTM C842 and manufacturer's written instructions.

PART 3 - EXECUTION

3.1 PROTECTION

- A. Comply with each manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
 1. Cover adjacent surfaces with materials that are proven to resist chemical solutions being used unless the solutions will not damage adjacent surfaces. Use protective materials that are UV resistant and waterproof. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.
 2. Do not apply chemical solutions during winds of sufficient force to spread them to unprotected surfaces.
 3. Neutralize and collect alkaline and acid wastes before disposal.
 4. Dispose of runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

3.2 MAINTENANCE REPAINTING, GENERAL

- A. Maintenance Repainting Appearance Standard: Completed work is to have a uniform appearance as viewed by Architect from building interior at [**5 feet (1.5 m)**] [**10 feet (3 m)**] **<Insert distance>** away from painted surface and from building exterior at [**20 feet (6 m)**] [**50 feet (15 m)**] **<Insert distance>** away from painted surface.
- B. Execution of the Work: In repainting surfaces, disturb them as minimally as possible and as follows:
 - 1. Remove failed coatings and corrosion and repaint.
 - 2. Verify that substrate surface conditions are suitable for repainting.
 - 3. Allow other trades to repair items in place before repainting.
- C. Mechanical Abrasion: Where mechanical abrasion is needed for the work, use gentle methods, such as scraping and lightly hand sanding, that will not abrade softer substrates, reducing clarity of detail.

3.3 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of painting work. Comply with paint manufacturer's written instructions for inspection.
- B. Maximum Moisture Content of Substrates: Do not begin application of coatings unless moisture content of exposed surface is below the maximum value recommended in writing by paint manufacturer and not greater than the following maximum values when measured with an electronic moisture meter appropriate to the substrate material:
 - 1. Concrete: [**12**] percent.
 - 2. Gypsum Board: [**12**] percent.
 - 3. Gypsum Plaster: [**12**] percent.
 - 4. Masonry (Clay and CMU): [**12**] < percent.
- C. Alkalinity: Do not begin application of coatings unless surface alkalinity is within range recommended in writing by paint manufacturer. Conduct alkali testing with litmus paper on exposed plaster, cementitious, and masonry surfaces.
- D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
 - 1. If existing surfaces cannot be prepared to an acceptable condition for proper finishing by using specified surface-preparation methods, notify Architect in writing.
- E. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.4 PREPARATORY CLEANING

- A. General: Use the gentlest, appropriate method necessary to clean surfaces in preparation for painting. Clean all surfaces, corners, contours, and interstices.
- B. Detergent Cleaning: Wash surfaces by hand using clean rags, sponges, and bristle brushes. Scrub surface with detergent solution and bristle brush until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet. Rinse with water applied by clean rags or sponges.
- C. Solvent Cleaning: Use solvent cleaning to remove oil, grease, smoke, tar, and asphalt from painted or unpainted surfaces before other preparation work. Wipe surfaces with solvent using clean rags and sponges. If necessary, spot-solvent cleaning may be employed just prior to commencement of paint application, provided enough time is allowed for complete evaporation. Use clean solvent and clean rags for the final wash to ensure that all foreign materials have been removed. Do not use solvents, including primer thinner and turpentine, that leave residue.
- D. Mildew: Clean off existing mildew, algae, moss, plant material, loose paint, grease, dirt, and other debris by scrubbing with bristle brush or sponge and detergent solution. Scrub mildewed areas with mildewcide. Rinse with water applied by clean rags or sponges.
- E. Mechanical Rust Removal:
 - 1. Remove rust with specified abrasives for ferrous-metal cleaning. Clean to bright metal.
 - 2. Wipe off residue with mineral spirits and either steel wool or soft rags.
 - 3. Dry immediately with clean, soft cloths. Follow direction of grain in metal.
 - 4. Prime immediately to prevent rust. Do not touch cleaned metal surface until primed.
- F. Paint Removal with Hand Tools: Remove paint manually using hand-held scrapers, wire brushes, sandpaper, and metallic wool as appropriate for the substrate material.

3.5 SUBSTRATE REPAIR

- A. General: Repair substrate surface defects that are inconsistent with the surface appearance of adjacent materials and finishes.
- B. Wood Substrate:
 - 1. Repair wood defects including dents and gouges more than [**1/8 inch (3 mm)**] [**1/4 inch (6 mm)**] <Insert dimension> in size and all holes and cracks by filling with wood-patching compound and sanding smooth. Reset or remove protruding fasteners.
 - 2. Where existing paint is allowed to remain, sand irregular buildup of paint, runs, and sags to achieve a uniformly smooth surface.
- C. Cementitious Material Substrate:
 - 1. General: Repair defects including dents and chips more than [**1/4 inch (6 mm)**] [**1/2 inch (13 mm)**] <Insert dimension> in size and all holes and cracks by filling with cementitious patching compound and sanding smooth. Remove protruding fasteners.

2. New and Bare Plaster: Neutralize surface of plaster with mild acid solution as recommended in writing by paint manufacturer. In lieu of acid neutralization, follow manufacturer's written instruction for primer or transition coat over alkaline plaster surfaces.
3. Concrete, Cement Plaster, and Other Cementitious Products: Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. If surfaces are too alkaline to paint, correct this condition before painting.

D. Gypsum-Plaster and Gypsum-Board Substrates:

1. Repair defects including dents and chips more than [**1/8 inch (3 mm)**] [**1/4 inch (6 mm)**] **<Insert dimension>** in size and all holes and cracks by filling with gypsum-plaster patching compound and sanding smooth. Remove protruding fasteners.
2. Rout out surface cracks to remove loose, unsound material; fill with patching compound and sand smooth.

E. Metal Substrate:

1. Preparation: Treat repair locations by wire-brushing and solvent cleaning. Use **mechanical** rust removal method to clean off rust.
2. Priming: Prime iron and steel surfaces immediately after repair to prevent flash rusting. Stripe paint corners, crevices, bolts, welds, and sharp edges. Apply two coats to surfaces that are inaccessible after completion of the Work.

3.6 PAINT APPLICATION, GENERAL

- A. Comply with manufacturers' written instructions for application methods unless otherwise indicated in this Section.
- B. Prepare surfaces to be painted according to the Surface-Preparation Schedule and with manufacturer's written instructions for each substrate condition.
- C. Apply a transition coat over incompatible existing coatings.
- D. Metal Substrate: Stripe paint corners, crevices, bolts, welds, and sharp edges before applying full coat. Apply two coats to surfaces that are inaccessible after completion of the Work. Tint stripe coat different than the main coating and apply with brush.

3.7 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- 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.

END OF SECTION 090190.52

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Non-load-bearing steel framing systems for interior partitions –
 - a. High school 3rd Floor restroom reconfiguration door frame partition.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4 QUALITY ASSURANCE

- A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Certified Steel Stud Association, the Steel Framing Industry Association or the Steel Stud Manufacturers Association.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings, according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.
- B. Horizontal Deflection: For non-composite wall assemblies, limited to 1/240 of the wall height based on horizontal loading of 5 lbf/sq. ft.

2.2 FRAMING SYSTEMS

- A. Framing Members, General: Comply with ASTM C754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C645 requirements for steel unless otherwise indicated.
2. Protective Coating: ASTM A653/A653M, G40, hot-dip galvanized unless otherwise indicated.

B. Studs and Tracks (Runners): ASTM C645.

1. Steel Studs and Tracks (Runners):
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following, but are not limited to:
 - 1) ClarkDietrich Prostud 20.
 - 2) MarinoWARE ViperStud 20.
 - b. Minimum Base-Steel Thickness: 0.0296 inch.
 - c. Depth: 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. Isolation Strip at Exterior Walls: Provide the following:
 1. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.

3.3 INSTALLATION, 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.

3.4 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
 - 1. Single-Layer Application: 16 inches on center unless otherwise indicated.
- B. Install studs so flanges within framing system point in same direction.
- C. Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated 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.
 - 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.
 - 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 - 4. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.

END OF SECTION 092216

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Interior gypsum board.
 - 2. Tile Backer Board

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 C 840 requirements or gypsum board 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, 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.

PART 2 - PRODUCTS

2.1 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. CertainTeed Corporation; Saint-Gobain North America.
2. Georgia-Pacific Gypsum LLC.
3. National Gypsum Company.
4. USG Corporation.

2.2 INTERIOR GYPSUM BOARD

- A. Gypsum Wallboard: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch.
2. Long Edges: Tapered.

- B. Gypsum Ceiling Board: ASTM C 1396/C 1396M.

1. Thickness: 1/2 inch.
2. Long Edges: Tapered.
3. Locations:
 - a. Any horizontal ceiling or soffit non-fire rated conditions.
 - b. Provide Gypsum Board, Type X: ASTM C 1396/C 1396M, 5/8 inch with tapered edges at fire-rated conditions.

- C. MAIN ELEMENTARY- ANNEX CLASSROOM - Abuse-Resistant Gypsum Board: ASTM C 1396/C 1396M gypsum board, tested according to ASTM C 1629/C 1629M. –

1. Core: 5/8 inch, Type X.
2. Surface Abrasion: ASTM C 1629/C 1629M, meets or exceeds Level 3 requirements.
3. Indentation: ASTM C 1629/C 1629M, meets or exceeds Level 1 requirements.
4. Soft-Body Impact: ASTM C 1629/C 1629M, meets or exceeds Level 2 requirements.
5. Long Edges: Tapered.
6. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

- CUSA ELEMENTARY- GROUPED RESTROOMS - Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with manufacturer's standard edges.

7. Core: 5/8 inch, Type X.
8. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.3 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.

1. Material: Galvanized 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.

- B. Exterior Trim: ASTM C 1047.

2.4 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.

- B. Joint Tape:

- 1. Interior Gypsum Board: Paper.

- C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.

- 1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
 - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.

- a. Use setting-type compound for installing paper-faced metal trim accessories.

- 3. Fill Coat: For second coat, use drying-type, all-purpose compound.
 - 4. Finish Coat: For third coat, use drying-type, all-purpose compound.
 - 5. Skim Coat: For final coat of Level 5 finish, use drying-type, all-purpose compound.

2.5 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.

- B. Steel Drill Screws: ASTM C 1002 unless otherwise indicated.

- 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.

- C. Sound-Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

- 1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
 - 2. See Drawings for thickness of sound-attenuation blankets required at each location.

- D. Acoustical Joint Sealants: as specified in Section 079219.

- E. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. 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.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments and dissimilar construction. Provide 1/4-inch maximum wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting surfaces with acoustical sealant.
- H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

3.3 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Wallboard Type: High school 3rd floor restroom reconfigurations.
 - 2. Abuse-Resistant Type: Main Annex Classroom
- B. Single-Layer Application:
 - 1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
 - 2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated 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 or required by fire-resistance-rated assembly.
 - 3. On Z-shaped furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
 - 4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.4 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
 - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
 - 2. Level 2: Panels that are substrate for tile and sheet wall covering/protection.
 - 3. 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."

END OF SECTION 092900

SECTION 093013 - CERAMIC TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Ceramic tile.
- B. Related Requirements:
 - 1. Section 079200 "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
 - 2. Section 092900 "Gypsum Board" for cementitious backer units glass-mat, water-resistant backer board.

1.3 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. Face Size: Actual tile size, excluding spacer lugs.
- C. Module Size: Actual tile size plus joint width indicated.

1.4 SUBMITTALS

- A. Product Data: For each type of product.
 - A. Samples for Verification: Of each item listed below, prepared on Samples of size and construction indicated. Where products involve normal color and texture variations, include Sample sets showing the full range of variations expected.
 - 1. Each type and composition of tile and for each color and texture required.
 - 2. Full-size units of each type of trim and accessory for each color required.
 - 3. Stone thresholds in 6-inch lengths.
 - 4. Metal edge strips in 6-inch lengths.
- B. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.

- C. Submit mortar, mastic and grout manufacturer data and MSDS to MCPS Division of Safety & Environmental Health Unit for review and approval.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Deliver extra materials to Owner. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Tile and Trim Units: Provide one (1) box of tile for each type and color.
 - 2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has completed tile installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. Source Limitations for Tile: Obtain each color, grade, finish, type, composition, and variety of tile and grout from one source with resources to provide products from the same production run for each contiguous area of consistent quality in appearance and physical properties without delaying the Work.
- C. Provide a five (5) year extended warranty to cover workmanship and material defects. Failure of tile to adhere to wall or floor shall be repaired at no cost to Owner.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling sealed tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.
- E. Handle tile with temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Tile: Obtain tile of each type and color or finish from single source or producer.
 - 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.
 - 1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
 - 2. Obtain waterproof membrane and crack isolation membrane except for sheet products, from manufacturer of setting and grouting materials.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:
 - 1. Waterproof membrane.
 - 2. Crack isolation membrane.
 - 3. Cementitious backer units.

2.2 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard Grade requirements, unless otherwise indicated.
 - 2. For facial dimensions of tile, comply with requirements relating to tile sizes specified in Part 1 "Definitions" Article.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in "Setting Materials" and "Grouting Materials" articles.
- C. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:

1. Provide tile trim and accessories that match color and finish of adjoining flat tile.
- D. Factory Blending: For tile exhibiting color variations within the ranges selected during Sample submittals, blend tile in the factory and package so tile units taken from one package show the same range in colors as those taken from other packages and match approved Samples.
- E. Mounting: Where factory-mounted tile is required, provide back- or edge-mounted tile assemblies as standard with manufacturer, unless another mounting method is indicated.
- F. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating them with a continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.3 TILE PRODUCTS

- A. Manufacturers: Subject to compliance with requirements, provide products as listed on the finish schedule on the drawings
- B. Trim Units: Provide tile trim units to match characteristics of adjoining flat tile and to comply with the following requirements:
 1. Shapes: As follows, selected from manufacturer's standard shapes:
 - a. Base for Portland Cement Mortar Installations: Coved.
 - b. Base for Thin-Set Mortar Installations: Straight.
 - c. External Corners for Portland Cement Mortar Installations: Bullnose shape with a radius of at least 3/4 inch, unless otherwise indicated.
 - d. External Corners for Thin-Set Mortar Installations: Surface bullnose.
 - e. Internal Corners: Field-butt square corners, except with coved base and cap angle pieces designed to member with stretcher shapes.

2.4 STONE THRESHOLDS

- A. General: Provide stone thresholds that are uniform in color and finish, fabricated to sizes and profiles indicated to provide transition between tile surfaces and adjoining finished floor surfaces.
 1. Fabricate thresholds to heights indicated, but not more than 1/2 inch above adjoining finished floor surfaces, with transition edges beveled on a slope of no greater than 1:2.
- B. Marble Thresholds: White bonded marble complying with MIA Group "A" requirements for soundness.

2.5 SURFACE PREPARATION MATERIALS

- A. Professional self-leveling underlayment, MAPEI, “Novoplan 2 Plus” for smoothing and repairing interior floors before the installation of floor coverings from 1/8” up to 1” (3 mm to 2.5 cm).
 - 1. Requires MAPEI Primer.

2.6 WATERPROOF MEMBRANES

- A. Premium latex Based Waterproofing and Crack isolation membrane; fast setting, flexible, thin, load-bearing, waterproofing membrane system consisting of a premixed, quick-drying liquid latex, for installation under ceramic tile complying with ANSI A118.10 and ANSI A118.12; and having IAPMO certification as a shower pan liner MAPEI, “Mapelastic AquaDefense”.

1.2 MORTAR MATERIALS

- A. Modified non-sagging dry-set cement mortar for large and heavy tile thin-set applications, complying with ANSI A118.4, A118.11 and ISO 13007 C2TES1P1; MAPEI “Ultraflex LFT”.

1.3 GROUT MATERIALS

- A. Ready-to-Use Grout: Professional-grade, ready-to-use color consistent quartz aggregate, for use with joint 1/16” to 1/2” (1.5 to 12 mm). MAPEI Flexcolor CQ”.
 - 1. Color: to be as selected by architect from manufacture’s full range.

2.7 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland-cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Two-Component Sealants: ASTM C920, Type M, Grade P, Class 25, use T (for use in joints subject to pedestrian traffic).
- C. Tile Cleaner: Product specifically acceptable to manufacturer of tile and grout manufacturer for application indicated and as recommended by National Tile Promotion Federation, 112 North Alfred Street, Alexandria, VA 22134 or Ceramic Tile Institute, 700 N. Virgil Avenue, Los Angeles, CA 90029.

2.8 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.

- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 - 1. Verify that substrates for setting tile are firm; dry; clean; free from oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 series of tile installation standards for installations indicated.
 - 2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
 - 3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust latter in consultation with Architect.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove coatings, including curing compounds, and other substances that contain soap, wax, oil, or silicone and are incompatible with tile-setting materials by using a terrazzo or concrete grinder, a drum sander, or a polishing machine equipped with a heavy-duty wire brush.
- B. Provide concrete substrates for tile floors installed with dry-set or latex-portland cement mortars that comply with flatness tolerances specified in referenced ANSI A108 series of tile installation standards for installations indicated.
 - 1. Use trowelable leveling and patching compounds per tile-setting material manufacturer's written instructions to fill cracks, holes, and depressions.
 - 2. Remove protrusions, bumps, and ridges by sanding or grinding.
- C. Blending: For tile exhibiting color variations within the ranges selected during Sample submittals, verify that tile has been blended in the factory and packaged so tile units taken from one package show the same range in colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION OF CERAMIC TILE

- A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
 - a. Tile floors in wet areas.
 - b. Tile floors consisting of tiles 8 by 8 inches or larger.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
 - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
 - 2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
- F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
 - 1. Ceramic Mosaic Tile: 5/16 inch.
 - 2. Porcelain Tile: 3/8 inch.
- G. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
 - 1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
 - 2. Prepare joints and apply sealants to comply with requirements of Division 7 Section "Joint Sealants."
- H. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

- I.
 - 1. Set thresholds in latex-portland cement mortar for locations where mortar bed would otherwise be exposed above adjacent nontile floor finish.

3.4 ADJUSTING AND CLEANING

- A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.
- B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove grout residue from tile as soon as possible.
 - 2. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.
 - 3. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to brick and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

3.5 PROTECTION

- A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- B. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

END OF SECTION 093013

SECTION 095123 - ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Acoustical tiles for interior ceilings.
 - 2. Fully concealed, direct-hung, suspension systems with exposed grid.
 - 3. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings
 - 4. Perimeter Trim

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data: For each type of product.
- C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:
 - 1. Minimum 6 inch x 6 inch samples of specified acoustical panel
 - 2. 8 inch long samples of exposed wall molding and suspension system, including main runner and 4 foot cross tees.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination drawings for reflected ceiling plans drawn accurately to scale and coordinating penetrations and ceiling-mounted items. Show the following:
 - 1. Ceiling suspension system members.
 - 2. Method of attaching suspension system hangers to building structure.
 - 3. Ceiling-mounted items including light fixtures; air outlets and inlets; speakers; sprinklers; and special moldings at walls, column penetrations, and other junctures of acoustical ceilings with adjoining construction.
 - 4. Minimum Drawing Scale: 1/8 inch = 1 foot.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For finishes to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents. Deliver extra materials to Owner.
 - 1. Acoustical Ceiling Units: Full-size tiles equal to 5 percent of quantity installed.
 - 2. Suspension-System Components: Quantity of each concealed grid and exposed component equal to 2 percent of quantity installed.

1.7 QUALITY ASSURANCE

- A. A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.
 - 1. Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.
 - 2. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 Classification.
 - 3. Fire Resistance: As follows tested per ASTM E119 and listed in the appropriate floor or roof design in the Underwriters Laboratories Fire Resistance Directory
 - 4. Acoustical Panels: As with other architectural features located at the ceiling, may obstruct or skew the planned fire sprinkler water distribution pattern through possibly delay or accelerate the activation of the sprinkler or fire detection systems by channeling heat from a fire either toward or away from the device. Designers and installers are advised to consult a fire protection engineer, NFPA 13, or their local codes for guidance where automatic fire detection and suppression systems are present.
 - 5. Coordination of Work: Coordinate acoustical ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical tiles, 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 tiles, permit them to reach room temperature and a stabilized moisture content.

- C. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical tile 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.
 - 1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical tile ceiling installation.

1.10 WARRANTY

- A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to the following:
 - 1. Acoustical Panels: Sagging and warping
 - 2. Grid System: Rusting and manufacturer's defect
- B. Warranty Period:
 - 1. Acoustical panels: Ten (10) years from date of substantial completion
 - 2. 2. Suspension: Ten (10) years from date of substantial completion
 - 3. 3. Ceiling System: Thirty (30) years from date of substantial completion

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations:
 - 1. Suspended Acoustical Tile Ceilings: Obtain each type of acoustical ceiling tile and its suspension system from single source from single manufacturer.
 - 2. Directly Attached Acoustical Tile Ceilings: Obtain each type of acoustical ceiling tile from single source from single manufacturer.
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or approved equal:
 - 1. Basis of Design: 2'x4' Provide Armstrong "Ultima 1" tegular edge, 2' x 2' and 2' x 4'
 - 2. Rockfon
 - 3. Certainteed
 - 4. USG

2.2 ACOUSTICAL TILES

- A. Acoustical Tile Standard: Provide manufacturer's standard tiles of configuration indicated that comply with ASTM E1264 classifications as designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.
 - 1. Mounting Method for Measuring Noise Reduction Coefficient (NRC): Type E-400 (plenum mounting in which face of test specimen is 15-3/4 inches away from the test surface) per ASTM E 795.
 - 2. Test Method for Ceiling Attenuation Class (CAC): Where acoustical panel ceilings are specified to have a CAC, provide units identical to those tested per ASTM E 1414 by a qualified testing agency.

2.3 METAL SUSPENSION SYSTEM, GENERAL

- A. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, fully concealed, metal suspension system and accessories of type, structural classification, and finish indicated that complies with applicable requirements in ASTM C635/C635M.
- B. Finishes and Colors: Provide manufacturer's standard factory-applied finish for type of system indicated.
 - 1. High-Humidity Finish: Comply with ASTM C 635 requirements for "Coating Classification for Severe Environment Performance" where high-humidity finishes for all locker room areas.
- C. Attachment Devices: Size for 5 times the design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
- D. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
 - 1. Zinc-Coated Carbon Steel Wire: ASTM A 641 (ASTM A 641M), Class 1 zinc coating, soft temper.
 - 2. Stainless Steel Wire: ASTM A 580/ A 580 M, Type 304, Non-magnetic.
 - 3. Nickel-Copper Alloy Wire: ASTM B 164, nickel-copper alloy UNS N04400.
 - 4. Size: Select wire diameter so that its stress at 3 times the hanger design load (ASTM C 635, Table 1, Direct Hung) will be less than the yield stress of wire, but provide not less than 0.106-inch- diameter wire.
- E. Edge Moldings and Trim: Type and profile indicated, or if not indicated, manufacturer's standard moldings for edges and penetrations that fit acoustical panel edge details and suspension systems indicated; formed from sheet metal of same material and finish as that used for exposed flanges of suspension system runners.
 - 1. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

METAL EDGE MOLDINGS AND TRIM

- A. Extruded-Aluminum Edge Moldings and Trim: Where indicated, provide manufacturer's extruded-aluminum edge moldings and trim of profile indicated or referenced by manufacturer's designations, including splice plates, corner pieces, and attachment and other clips, complying with seismic design requirements.
 - 1. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.
 - 2. Factory finished baked polyester paint
 - 3. Color: White
 - 4. Size: 120" x 4" high

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing and substrates to which acoustical tile ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine acoustical tiles before installation. Reject acoustical tiles that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Install acoustical panel ceilings to comply with publications referenced below per manufacturer's instructions and CISCA "Ceiling Systems Handbook."
 - 1. Standard for Ceiling Suspension System Installations: Comply with ASTM C 636.
 - 2. CISCA Recommendations for Acoustical Ceilings: Comply with CISCA "Recommendations for Direct-Hung Acoustical Tile and Lay-In Panel Ceilings."
- 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 the supporting structure or of the 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. Splay hangers only where required, and if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 4. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and

hangers in the form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.

5. Secure wire hangers to ceiling suspension members and to supports above with a minimum of 3 tight turns. Connect hangers either directly to structures or to inserts, eye screws, or other devices that are secure, that are appropriate for substrate, and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 6. Do not attach hangers to steel deck tabs.
 7. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 8. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers, unless otherwise shown; and provide hangers not more than 8 inches (200 mm) from ends of each member.
 9. Use stainless steel wire hangers in shower rooms.
- C. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Screw attach moldings to substrate at intervals not over 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3.18 mm in 3.66 m). Miter corners accurately and connect securely.
 2. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- D. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- E. Install acoustical panels with undamaged edges and fitted accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide neat, precise fit.
1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension system runners and moldings.
 2. Paint the cut panel edges remaining exposed after installation; match color of exposed panel surfaces using coating recommended for this purpose by acoustical panel manufacturer.
 3. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

3.3 ADJUSTING AND CLEANING

- A. Clean exposed surfaces of acoustical tile ceilings, including trim and edge moldings. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.
- B. Remove and replace tiles and other ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095123

096723.1 RESINOUS FLOORING AND COATINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Epoxy Flooring and Coatings.
 - 1. Troweled epoxy resin high-density flooring. (Cheminert HD) for use over existing epoxy resin systems
- B. Urethane Concrete Flooring.
 - 1. Slurry-applied urethane cement composition flooring with slip resistant broadcast. (Tek-Crete SL-B)
- C. Flexibilized urethane epoxy resin waterproof membrane

1.2 REFERENCES

- A. American Standard Test Method International (ASTM):
 - 1. ASTM C307 - Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacing.
 - 2. ASTM C531 - Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
 - 3. ASTM C579 - Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
 - 4. ASTM C580 - Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes..
 - 5. ASTM D523 - Standard Test Method for Specular Gloss.
 - 6. ASTM D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
 - 7. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.
 - 8. ASTM D2240 - Standard Test Method for Rubber Property-Durometer Hardness.
 - 9. ASTM D4060 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
 - 10. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.
 - 11. ASTM E162 - Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source.
 - 12. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
 - 13. ASTM F1679 - Standard Test Method for Using a Variable Incidence Tribometer (VIT).
 - 14. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
 - 15. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes1

- B. American Concrete Institute (ACI):
 - 1. ACI 503.1 - Standard Specification for Bonding Hardened Concrete, Steel, Wood, Brick, and Other Materials to Hardened Concrete with a Multi-Component Epoxy Adhesive.
 - 2. ACI 503.R - Use of Epoxy Compounds with Concrete.
- C. American National Standards Institute (ANSI):
 - 1. ANSI A1264 - American National Standard for the Provision of Slip Resistance on Walking/Working Surfaces.
 - 2. ANSI/ESD S 6.1 - For The Protection of Electrostatic Discharge Susceptible Items - Grounding.
- D. International Concrete Repair Institute (ICRI):
 - 1. ICRI - 310.25 Selecting and Specifying Concrete Surface Preparation.
- E. Society of Protective Coatings (SSPC):
 - 1. SSPC - Monitoring and Controlling Ambient Condition During Coating operations.
 - 2. SSPC TU-10 - Procedures For Applying Thick Film Coatings and Surfacing Over Concrete Floors.
 - 3. SSPC TR-5 - Design, Installation, and Maintenance of Protective Polymer Flooring Systems for Concrete.
 - 4. SSPC TECHNOLOGY GUIDE NO. 10 - Guide to Specifying Coatings Conforming to Volatile Organic Compound (VOC) Content Requirements.
 - 5. SSPC-SP 13/NACE No. 6 - Surface Preparation of Concrete.
- F. United States Defense Standard (MIL):
 - 1. MIL-D-3134 - Deck Covering Materials.
 - 2. MIL-PRF-3135 - Performance Specification: Deck Covering Underlay Materials.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data:
 - 1. Manufacturer's data sheets on each product to be used.
 - 2. Preparation instructions and recommendations.
 - 3. Storage and handling requirements and recommendations.
- C. Verification Samples: For products specified, two samples, 6 inches (150 mm) square representing actual product, color, texture and patterns.
- D. Shop Drawings: Details of materials, construction and finish. Include relationship with adjacent construction.
- E. Contractor Certification: Manufacturer letter certifying installer is properly trained in application of materials being installed, and is acceptable to materials manufacturer.
- F. Guarantee Certification: Letter from the primary materials manufacture certifying that the manufacturer will issue a joint installer manufacturer guarantee with the installing contractor.

- G. Certification: CA Department of Public Health 01350 Method for Testing and Evaluation of Volatile Organic Chemical Emissions From Indoor Sources Using Environmental Chambers.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with ISO certification and a minimum ten years documented experience.
- B. Installer Qualifications: Specializes in installations to that required for Project with five years' experience. Engage an SSPC Concrete Coatings Inspector certified to perform inspections on Project. Installer will be acceptable to materials manufacturer.
- C. Source Limitations: Each product type from single manufacturer ensuring uniformity.
- D. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
 - 1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
 - 2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
 - 3. Retain mock-up during construction as standard for comparison with completed work.
 - 4. Do not alter or remove mock-up until work is completed or removal is authorized.

1.5 PRE-INSTALLATION CONFERENCE

- A. Pre-installation Meetings: Coordinate work of this Section, with related work.
 - 1. Attendance: Subcontractor performing work and manufacturers and fabricators involved, or affected by, installation. Coordinate installations that precede or follow.
 - 2. Agenda: Review progress of construction activities and preparations for the particular activity under consideration. Agenda shall include schedule, drain and floor sink interface, detailing, door thresholds, responsibilities, critical path items, and approvals.
 - 3. Record, agreements, and disagreements, and corrective measures and actions.
 - 4. Reporting: Distribute minutes to each party present and others requiring information.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages and containers with unbroken seals and bearing manufacturer's labels with date of manufacture and production lot number. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
- B. Protect from damage due to weather, excessive temperature, and construction operations.
- C. When practical stage materials in area of Work 48 hours prior to beginning of Work.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, surface temperature, material temperature and ventilation) within limits recommended by manufacturer during installation and cure. Do not install under conditions outside manufacturer's recommended limits.
- B. Restrict access to Work area except installing contractor and site supervision during preparation, installation and cure period.

- C. Lighting: Permanent lighting shall be in place prior to flooring installation.

1.8 WARRANTY

- A. Manufacturer's Warranty: Manufacturer's standard limited warranty for the specified term.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers subject to compliance with the requirements:
1. Crossfield Products Corporation, which is located at: 140 Valley Road; Roselle Park, NJ 07204; ASD Phone: 908-245-2800; Fax: 908-245-0659; Email: info@dextotex.com; Web: www.dextotex.com. Also located in Cibolo, Texas, and Ranch Dominguez, California.
 2. Contacts: Edward Frick – Northeast Director of Sales (908) 399-9147
edf@dextotex.com

2.2 TROWELED EPOXY FLOORING AND COATINGS

- A. Basis of Design Troweled Epoxy Resin High-Density Flooring:
1. Basis of Design: Dex-O-Tex Cheminert HD by Crossfield Products.
 2. Physical Properties:
 - a. Compressive Strength (ASTM C579): 11,000 psi (75.8 MPa).
 - b. Tensile Strength (ASTM C307): 1,643 psi (11.3 MPa).
 - c. Flexural Modulus of Elasticity (ASTM C580): 4,300 psi (29.6 MPa).
 - d. Water Absorption (MIL-PRF-3134): 0.3 percent maximum.
 - e. Surface Hardness (ASTM D2240) 85.5 Durometer "D".
 - f. Abrasion Resistance (ASTM D1044): 0.0 gr.
 - g. Impact Resistance (MIL-PRF-3134, Paragraph 4.7.3): 0.024 inch (0.61 mm) maximum, no chipping, cracking, or loss of adhesion.
 - h. Impact Resistance (Gardner Impact Tester): No chipping, cracking, or delamination and not more than 0.014 inch (0.36 mm) indentation.
 - i. Adhesion (ACI 503.1): 400 psi (2.76 MPa), 100 percent failure in concrete.
 - j. Electrical Conductivity (NFPA 56A): Di-electric.
 - k. Flammability-Critical Radiant Flux (ASTM E648): 1.07 watts/sq.cm.
 3. Colors: Per Schedule
 4. Thickness: 3/16 inch (5 mm).
 5. Top Coat: Posi-Tred O Pigmented.
 6. Finish Coat: Aero-FLor 100 Clear for Chemical resistance and UV Stability
 7. Anti-Microbial Additive: Prevents most bacteria, fungi, algae and actinomycetes.
 8. Vapor Control Primer Membrane: Type recommended by flooring manufacturer for type of service and floor condition indicated.
 9. Crack Isolation/Anti-Fracture Membrane: Type recommended by manufacturer for service condition of underlayment: Dex-O-Tex Cheminert SC Membrane

2.3 URETHANE CONCRETE FLOORING

- A. Poured Urethane Cement Composition Flooring with Slip Resistant Broadcast:
 - 1. Basis of Design: Dex-O-Tex Tek-Crete SL-B with Quik Glaze & Cheminert SC Membrane by Crossfield Products.
 - 2. Physical Properties:
 - a. Compressive Strength (ASTM C579): 6,100 psi (42.0 MPa).
 - b. Thermal Distortion (350 degrees F Emersion): Passes.
 - c. Tensile Strength (ASTM C307): 1,000 psi (6.89 MPa).
 - d. Flexural Strength (ASTM C580): 2,000 psi (13.8 MPa).
 - e. Thermal Co-Efficient of Thermal Expansion (ASTM C531): 1.5×10^{-5} .
 - f. Density (ASTM C905): 130 pcf (20.4 kN/cu.m).
 - g. Water Absorption (MIL-PRF-3134): 0.64 percent.
 - h. Surface Hardness (ASTM D2240) 85-90 Durometer "D".
 - i. Abrasion Resistance (ASTM D1044): 33mg.
 - j. Adhesion (ASTM D4541): 400 psi (2.76 MPa), 100 percent failure in concrete.
 - k. Flammability-Critical Radiant Flux (ASTM E648): 1.07 watts/sq.cm.
 - l. Resistance to Fungal Growth (ASTM G21): Passes, Rating 1.
 - 3. Body Coat: 3/16 to 1/4 inch (5 to 6 mm) thick with slip resistant aggregate.
 - 4. Colors: per schedule
 - 5. Top Coat: Dex-O-Tex Quik Glaze.
 - 6. Anti-Microbial Additive: Prevents most bacteria, fungi, algae and actinomycetes.
- B. UV Stable Polyaspartic Composition Sealer:
 - 1. Basis of Design: Dex-O-Tex Quik Glaze by Crossfield Products.
 - 2. UV stable.
 - 3. Withstands heavy and abusive service.
 - 4. Excellent chemical resistance.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin preparation and installation until substrates are properly constructed and inspected complying with ACI 311.4R-05 Guide for Concrete Inspection. The General Contractor is to correct non-conformities if defects are discovered. Repair per ACI 546.R-04. Turn over work in broom clean condition free of debris and foreign matter.
- B. Perform moisture testing per ASTM F1869 and F2170. Document results per this specification. If MVER or RH exceeds manufactures recommend level for specified product. Apply vapor control primer before proceeding.
 - 1. **NOTE: Basis of Design system, when Basecoat is applied directly to the concrete substrate, can withstand MVER Levels of 99% RH per ASTM 2170 and 20 lbs. per ASTM 1869. If Membrane is required, use recommended Vapor Control Primer.**
- C. Verify the substrate has proper slope for drainage. If proper slope for drainage is not in the substrate notify the Architect and General Contractor immediately. Do not proceed with flooring installation until the conditions are corrected.

3.2 PREPARATION

A. EPOXY TERRAZZO AND CONCRETE SUBSTRATES:

1. Clean surfaces thoroughly prior to commencement of the preparation and installation.
2. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under project conditions.
3. Mechanically prepare the epoxy terrazzo down to a clean sound substrate.
4. Mechanically prepare the terrazzo cove base. Apply Dex-O-Tex Décor Flor Primer and Cove Base Gel, carrying the base up past the top of the terrazzo base, terminating it in a grout line on the tile wall. The result will be what is referred to as a "Featheredge Base".
5. Rout out any cracks in the substrate, and detail the crack with Dex-O- Tex Cheminert SC Membrane. Once the detail is complete, coat the entire floor with 30 mils of the membrane. Allow to cure.
6. UV stability. Verify proper surface profile per ICRI 310.25 CSP coupons. Perform water break test and tape dust cleanliness test per ISO 8502-3 to determine surface is acceptable to proceed

B. TILE MOSIAC OR REPAIRED GROUT BED SUBSTRATES

1. Clean surfaces thoroughly prior to commencement of the preparation and installation.
2. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under project conditions.
3. Substrate: Perform preparation and cleaning procedures according with SSPC-SP 13 and flooring manufacturer's instructions for particular substrate conditions involved, as specified. Provide clean, dry, and neutral substrate for flooring application
4. Mosaic Tile Surfaces: Mechanically prepare the mosaic tile, removing the glaze. Any loose tiles should be removed and the areas cleaned down to the concrete substrate. Remove sufficient material to provide a sound surface free of laitance, glaze, efflorescence, and any bond-inhibiting curing compounds or form release agents. Remove grease, oil, and other penetrating contaminates. Repair damaged and deteriorated concrete to acceptable condition. Leave surface free of dust, dirt, laitance, and efflorescence.
5. Cut 1/8" X 1/2" keyways around the perimeter, around drains, clean outs, access panels or other flooring interruption, and at expansion or isolation joints.

NOTE: Fluid applied waterproof membrane is required, (Dex-O-Tex Cheminert SC Membrane), keyways will not be required. A "Neat" coat, (30 mils), of the Membrane is applied, followed by a 10-15 mils application over the cured "Neat Coat" with a full aggregate broadcast to rejection.

6. Verify proper surface profile per ICRI 310.25 CSP coupons. Perform water break test and tape dust cleanliness test per ISO 8502-3 to determine surface is acceptable to proceed.

3.3 INSTALLATION EPOXY TROWELED

A. Apply Dex-O-Tex Cheminert HD slurry epoxy broadcast flooring system, with Posi-Tred O, (epoxy color coat), and clear Aero-Flor 100 finish coat..

B. Apply Flooring System components according to manufacturer's written instructions. Produce a uniform, monolithic wearing surface of thickness, color and texture indicated.

1. Coordinate application of components. Provide optimum adhesion of coatings to substrate, and optimum intercoat adhesion.
2. Cure coatings per manufacturer's written instructions. Prevent contamination during application and curing processes.
3. Expansion, Isolation and Control Joint Treatment: At substrate expansion, isolation

- and control joints, comply with resinous flooring manufacturer's written instructions.
4. Contractor shall keep daily logs recording the work performed and environmental conditions as required by the materials manufacturer.
- C. Vapor Control Primer Membrane: Apply over prepared substrate at required spreading rate.
- D. Crack Isolation/Anti-Fracture Membrane: After Surface Preparation, route out cracks greater than 60 mils. Vacuum cracks and surrounding surface. Remove dust and debris. Fill cracks with flexibilized epoxy membrane. Strip with fabric reinforcement 2 inches (51 mm) on both sides of cracks or per manufacturer's recommendations.
 1. Crack fill Application Location: at notable substrate cracks. –assume 20% of floor areas will need crack repair. Applies at high school restrooms only
 2. Membrane Application Location: Entire substrate surface for small restrooms, as needed for larger grouped restrooms at high school only.
- E. Self-Leveling Body Coats: Apply in thickness indicated for flooring system.
 1. Aggregates: Broadcast aggregates at rate recommended by manufacturer. After resin cures, remove excess aggregates. Provide surface texture indicated.
- F. Install 4” integral cove base with 5/8” radius at all vertical horizontal transitions.
- G. Top Coat: Posi-Tred O Pigmented. Apply in number indicated for flooring system and at spreading rates recommended by manufacturer to produce wearing surface indicated.
- H. Finish Coat: Apply Aero-Flor 100 per the manufacturer’s written recommendations.

3.4 INSTALLATION URETHANE CONCRETE

- A. Apply Flooring System components according to manufacturer's written instructions. Produce a uniform, monolithic wearing surface of thickness, color and texture indicated.
 1. Coordinate application of components. Provide optimum adhesion of coatings to substrate, and optimum intercoat adhesion.
 2. Cure coatings per manufacturer's written instructions. Prevent contamination during application and curing processes.
 3. Expansion, Isolation and Control Joint Treatment: At substrate expansion, isolation and control joints, comply with resinous flooring manufacturer's written instructions.
 4. Contractor shall keep daily logs recording the work performed and environmental conditions as required by the materials manufacturer.
- B. Install 4” integral cove base with 5/8” radius at all vertical horizontal transitions. This is done using Epoxy Resins with the Sealer CP topcoat for a consistent finish for all horizontal and vertical applications.
- C. Self-Leveling Body Coats: Apply in thickness indicated for flooring system.
 1. Aggregates: Broadcast aggregates at rate recommended by manufacturer. After resin cures, remove excess aggregates. Provide surface texture indicated.
- D. Top Coat: Dex-O-Tex Quik Glaze. Apply in number indicated for flooring system and at spreading rates recommended by manufacturer to produce wearing surface indicated.

3.5 CLEANING AND PROTECTION

- A. Clean products after 96 hours cure in accordance with the manufacturer's recommendations.
- B. Prohibit foot and wheel traffic over flooring for 24 hours. Light foot traffic is acceptable after 24 hours. Normal traffic after 48 hours.
- C. Do not expose to harsh chemicals until full 7 days cure.
- D. Touch-up, repair or replace damaged products before Substantial Completion.
- E. Provide floor protection acceptable to the materials manufacturer.

END OF SECTION

SECTION 101423.16 - ROOM-IDENTIFICATION PANEL SIGNAGE

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 UNIT PRICES

1.3 DEFINITIONS

- A. Accessible: In accordance with the accessibility standard.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For room-identification signs.
 - 1. Show message list, typestyles, graphic elements
- C. Samples for Initial Selection: For each type of sign assembly, exposed component, and exposed finish.
- D. Product Schedule: For room-identification signs. Use same designations indicated on Drawings or specified.

1.5 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For special warranty.

1.6 FIELD CONDITIONS

- A. Field Measurements: Verify locations of **anchorage devices** embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
 - a. Deterioration of finishes beyond normal weathering.
 - b. Deterioration of embedded graphic image.
 - c. Separation or delamination of sheet materials and components.
2. Warranty Period: **Five** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1

2.2 ROOM-IDENTIFICATION SIGNS

- A. Room-Identification Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
 - a. [Ace Sign Systems, Inc.](#)
 - b. [Advance Corporation](#); Braille-Tac Division.
 - c. [Allen Industries, Inc.](#)
 - d. [Allen Markings International.](#)
 - e. [ASE, Inc.](#)
 - f. [ASI Sign Systems, Inc.](#)
 - g. [Best Sign Systems Inc.](#)
 - h. [Bunting Graphics, Inc.](#)
 - i. [Clarke Systems.](#)
 - j. [Diskey Sign Company.](#)
 - k. [Fossil Industries, Inc.](#)
 - l. [InPro Corporation.](#)
 - m. [Mohawk Sign Systems.](#)
 - n. [Nelson-Harkins Industries.](#)
 - o. [Poblocki Sign Company, LLC.](#)
 - p. [Seton Identification Products.](#)
 - q. [Supersine Company \(The\)](#); Division of Stamp-Rite, Inc.
 - r. [Vista System.](#)
 - s. [Vomar Products, Inc.](#)
2. Laminated-Sheet Sign: Photopolymer face sheet with raised graphics laminated to acrylic backing sheet to produce composite sheet.
 - a. Composite-Sheet Thickness: Manufacturer's standard for size of sign
 - b. Surface-Applied Graphics: Applied vinyl film
 - c. Color(s): As selected by Architect from manufacturer's full range

2.3 SIGN MATERIALS

- A. Acrylic Sheet: ASTM D4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).
- B. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

2.4 ACCESSORIES

- A. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch (1.14 mm) thick, with adhesive on both sides.
- B. Hook-and-Loop Tape: Manufacturer's standard two-part tape consisting of hooked part on sign back and looped side on mounting surface.

2.5 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
 - 1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
 - 2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
 - 3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
 - 4. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

2.6 GENERAL FINISH REQUIREMENTS

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
 - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 - 2. Install signs so they do not protrude or obstruct according to the accessibility standard.
 - 3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
- B. Accessibility: Install signs in locations on walls according to the accessibility standard. Minimum 48" max 60" AFF
- C. Mounting Methods:
 - 1. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position, and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.
 - 2. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.
 - 3. Hook-and-Loop Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply sign component of two-part tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage; push to engage tape adhesive. Keep tape strips **0.250 inch** away from edges to prevent visibility at sign edges when sign is initially installed or reinstalled. Apply substrate component of tape to substrate in locations aligning with tape on back of sign; push and rub well to fully engage tape adhesive to substrate.

3.2 ADJUSTING AND CLEANING

- A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- B. Remove temporary protective coverings and strippable films as signs are installed.
- C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

3.3 PANEL SIGN SCHEDULE

- A. New 6x8” Panel Signs - white on grey background at each Restroom within contract.
- B. One sign to be provided at each restroom within project scope of work.
- C. Architect to provide message schedule.

END OF SECTION 101423.16

SECTION 102113.13 - METAL TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Painted steel toilet compartments configured as toilet enclosures and urinal screens.
2. Graffiti Resistant powder coated steel compartments toilet enclosures and urinal screens

B. Related Requirements:

1. Section 102800 "Toilet, Bath, and Laundry Accessories" for toilet tissue dispensers, grab bars, purse shelves, and similar accessories mounted on toilet compartments.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for toilet compartments.

B. Shop Drawings: For toilet compartments.

1. Include plans, elevations, sections, and attachment details.
2. Show locations of cutouts for compartment-mounted toilet accessories.
3. Show locations of reinforcements for compartment-mounted grab bars and locations of blocking for surface-mounted toilet accessories.
4. Show overhead support or bracing locations.

C. Samples for Initial Selection: For each type of toilet compartment material indicated.

1. Include Samples of hardware and accessories involving material and color selection.

D. Samples for Verification: For the following products, in manufacturer's standard sizes unless otherwise indicated:

1. Each type of material, color, and finish required for toilet compartments, prepared on ~~6-inch-~~ (152-mm-) square Samples of same thickness and material indicated for Work.
2. Each type of hardware and accessory.

- E. Product Schedule: For toilet compartments, prepared by or under the supervision of supplier, detailing location and selected colors for toilet compartment material.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of toilet compartment.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For toilet compartments to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Door Hinges: 30 hinge(s) with associated fasteners.
 - 2. Latch and Keeper: 30 latch(es) and keeper(s) with associated fasteners.
 - 3. Door Bumper 30 door bumper(s) with associated fasteners.
 - 4. Door Pull: **30** door pull(s) with associated fasteners.
 - 5. Fasteners: 50 fasteners of each size and type.

1.7 PROJECT CONDITIONS

- A. Field Measurements must be taken at each location: Verify locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with applicable provisions in **the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1** for toilet compartments designated as accessible.

2.2 PAINTED STEEL TOILET COMPARTMENTS

- A. See Schedule for manufacture and model
- B. Toilet-Enclosure Style: **Overhead braced**
- C. Urinal-Screen Style: **Floor anchored**

- D. Door, Panel, and Pilaster Construction: Seamless, metal facing sheets pressure laminated to core material; with continuous, interlocking molding strip or lapped-and-formed edge closures; corners secured by welding or clips and exposed welds ground smooth. Exposed surfaces shall be free of pitting, seam marks, roller marks, stains, discolorations, telegraphing of core material, or other imperfections.
1. Core Material: Manufacturer's standard sound-deadening honeycomb of resin-impregnated kraft paper in thickness required to provide finished thickness of **1 inch (25 mm)** for doors and panels and **1-1/4 inches (32 mm)** for pilasters.
 2. Grab-Bar Reinforcement: Provide concealed internal reinforcement for grab bars mounted on units of size and material adequate for panel to withstand applied downward load on grab bar of at least 250 lbf (1112 N), when tested according to ASTM F446, without deformation of panel.
 3. Tapping Reinforcement: Provide concealed reinforcement for tapping (threading) at locations where machine screws are used for attaching items to units.
- E. Urinal-Screen Construction:
1. Flat-Panel Urinal Screen: Matching panel construction.
 2. Integral-Flange, Wall-Hung Urinal Screen: Similar to panel construction, with integral full-height flanges for wall attachment, and maximum **1-1/4 inches (32 mm)** thick.
 3. Wedge-Shaped, Wall-Hung Urinal Screen: Similar to panels, V-shaped, fabricated for concealed wall attachment, and maximum **6 inches (152 mm)** wide at wall and minimum **1 inch (25 mm)** wide at protruding end.
- F. Facing Sheets and Closures: **Electrolytically coated steel** sheet with nominal base-metal (uncoated) thicknesses as follows:
1. Pilasters, Braced at Both Ends: Manufacturer's standard thickness, but not less than **0.036 inch (0.91 mm)**.
 2. Pilasters, Unbraced at One End: Manufacturer's standard thickness, but not less than **0.048 inch (1.21 mm)**.
 3. Panels: **Manufacturer's standard thickness, but not less than 0.030 inch (0.76 mm)**
 4. Doors: Manufacturer's standard thickness, but not less than **0.030 inch (0.76 mm)**.
 5. Flat-Panel Urinal Screens: Thickness matching the panels.
 6. Integral-Flange, Wall-Hung Urinal Screens: Manufacturer's standard thickness, but not less than **0.030 inch (0.76 mm)**.
 7. Wedge-Shaped, Wall-Hung Urinal Screens: Manufacturer's standard thickness, but not less than **0.036 inch (0.91 mm)**.
- G. Pilaster **Shoes and Sleeves (Caps)**: Stainless steel sheet, not less than **0.031-inch (0.79-mm)** nominal thickness and **3 inches (76 mm)** high, finished to match hardware.
- H. Urinal-Screen Post: Manufacturer's standard post design of **material matching the thickness and construction of pilasters or 1-3/4-inch- (44-mm-) square, aluminum tube with satin finish** with shoematching that on the pilaster.
- I. Brackets (Fittings):
1. Stirrup Type: Ear or U-brackets; **stainless steel**

- J. Steel Sheet Finish: Immediately after cleaning and pretreating, apply manufacturer's standard baked-on finish, including thermosetting, electrostatically applied, and powder coatings. Comply with coating manufacturer's written instructions for applying and baking.

1. Color: **As selected by Architect from manufacturer's full range**

- K. Graffiti resistant finishes : All sheet metal to be thoroughly cleaned, phosphated and finished with a high performance poly-urethane anti-graffiti powder coating, electrostatically applied and oven cured to provide a uniform smooth protective finish.

1. Color: **As selected by Architect from manufacturer's full range**

2.3 HARDWARE AND ACCESSORIES

1. Material: **Clear-anodized aluminum.**
 2. Hinges: Manufacturer's standard **continuous, cam type that swings to a closed or partially open position** allowing emergency access by lifting door.
 3. Latch and Keeper: Manufacturer's standard **surface-mounted** latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible.
 4. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories.
 5. Door Bumper: Manufacturer's standard rubber-tipped bumper at out-swinging doors
 6. Door Pull: Manufacturer's standard unit at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible.
- B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.
- C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel compatible with related materials.

2.4 MATERIALS

- A. Aluminum Castings: ASTM B26/B26M.
- B. Aluminum Extrusions: **ASTM B221 (ASTM B221M).**
- C. Brass Castings: ASTM B584.
- D. Brass Extrusions: ASTM B455.
- E. Steel Sheet: Commercial steel sheet for exposed applications; mill phosphatized and selected for smoothness.

- F. Construction: Doors, Panels and Pilasters shall be constructed of two sheets of panel flatness zinc-coated steel, Galvanneal ASTM A653 GR33, laminated under pressure to a honeycomb core for sound deadening and rigidity. Formed edges to be welded together and inter-locked under tension with a roll-formed oval crown locking bar, mitred, welded and ground smooth at the corners. Honeycomb to have a maximum 25mm (1") cell size.

2.5 FABRICATION

- A. Fabrication, General: Fabricate toilet compartment components to sizes indicated. Coordinate requirements and provide cutouts for through-partition toilet accessories, and solid blocking within panel where required for attachment of toilet accessories.
- B. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.
- C. Floor-Anchored Units: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment nuts at pilasters for structural connection to floor. Provide shoes at pilasters to conceal anchorage.
- D. Ceiling-Hung Units: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment nuts at pilasters for connection to structural support above finished ceiling. Provide assemblies that support pilasters from structure without transmitting load to finished ceiling. Provide sleeves (caps) at tops of pilasters to conceal anchorage.
- E. Floor-and-Ceiling-Anchored Units: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment at tops and bottoms of pilasters. Provide shoes and sleeves (caps) at pilasters to conceal anchorage.
- F. Urinal-Screen Posts: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment at[**tops and**] bottoms of posts. Provide shoes[**and sleeves (caps)**] at posts to conceal anchorage.
- G. Door Size and Swings: Unless otherwise indicated, provide ~~24-inch-~~ (610-mm-) wide, in-swinging doors for standard toilet compartments and ~~36-inch-~~ (914-mm-) wide, out-swinging doors with a minimum ~~32-inch-~~ (813-mm-) wide, clear opening for compartments designated as accessible.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas and conditions, with Installer present, for compliance with requirements for fastening, support, alignment, operating clearances, and other conditions affecting performance of the Work.
 - 1. Confirm location and adequacy of blocking and supports required for installation.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Coordinate layout and installation of supports, inserts, and anchors built into other units of work for toilet compartment anchorage.

3.2 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position indicated with manufacturer's recommended anchoring devices.
 - 1. Maximum Clearances:
 - a. Pilasters and Panels: **1/2 inch (13 mm)**.
 - b. Panels and Walls: **1 inch (25 mm)**.
 - 2. Stirrup Brackets: Secure panels to walls and to pilasters with no fewer than **two brackets attached** near top and bottom of panel.
 - a. Locate wall brackets so holes for wall anchors occur in masonry or tile joints.
 - b. Align brackets at pilasters with brackets at walls.
 - 3. Full-Height (Continuous) Brackets: Secure panels to walls and to pilasters with full-height brackets.
 - a. Locate bracket fasteners so holes for wall anchors occur in masonry or tile joints.
 - b. Align brackets at pilasters with brackets at walls.
- B. Overhead-Braced Units: Secure pilasters to floor and level, plumb, and tighten. Set pilasters with anchors penetrating not less than **1-3/4 inches (44 mm)** into structural floor unless otherwise indicated in manufacturer's written instructions. Secure continuous head rail to each pilaster with no fewer than two fasteners. Hang doors to align tops of doors with tops of panels, and adjust so tops of doors are parallel with overhead brace when doors are in closed position.
- C. Floor-Anchored Units: Set pilasters with anchors penetrating not less than **2 inches (51 mm)** into structural floor unless otherwise indicated in manufacturer's written instructions. Level, plumb, and tighten pilasters. Hang doors and adjust so tops of doors are level with tops of pilasters when doors are in closed position.
- D. Ceiling-Hung Units: Secure pilasters to supporting structure and level, plumb, and tighten. Hang doors and adjust so bottoms of doors are level with bottoms of pilasters when doors are in closed position.
- E. Floor-and-Ceiling-Anchored Units: Secure pilasters to supporting construction and level, plumb, and tighten. Hang doors and adjust so doors are level and aligned with panels when doors are in closed position.
- F. Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

3.3 ADJUSTING

- A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

END OF SECTION 102113.13

SECTION 102800 – TOILET ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Public-use washroom accessories.
2. Attic Stock
3. Including owner supplied and contractor installed items

1.2 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated.
2. Identify accessories using designations indicated.

1.4 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For manufacturer's special warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For accessories to include in maintenance manuals.

1.6 WARRANTY

- A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, visible silver spoilage defects.
 2. Warranty Period: 15 years from date of Substantial Completion.
- B. Manufacturer's Special Warranty for Hand Dryers: Manufacturer agrees to repair or replace hand dryers that fail in materials or workmanship within specified warranty period.
1. Warranty Period: **Two** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Structural Performance: Design accessories and fasteners to comply with the following requirements:
1. Grab Bars: Installed units are able to resist 250 lbf concentrated load applied in any direction and at any point.

2.2 PUBLIC-USE WASHROOM ACCESSORIES

- A. Source Limitations: Obtain public-use washroom accessories from single source from single manufacturer.
- B. Toilet Tissue (Roll) Dispenser <TD-1>: **Owner Supplied - Contractor Installed**
1. **B**asis of design: Cascades Pro Tandem C380
 2. Description: Double-roll dispenser.
 3. Mounting: Surface mounted.
 4. Operation: Noncontrol delivery with theft-resistant spindle
 5. Capacity: Designed for up to 6" diameter tissue rolls.
 6. Material and Finish: Black
- C. Soap Dispenser <SD -1>: **Owner Supplied - Contractor Installed**
1. Basis of Design: Janico Foam Dispenser #2025
 2. Description: Automatic

3. Mounting: Vertically oriented, surface mounted.
4. Capacity: 40 oz.
5. Materials Finish - White

D. Grab Bar <GB -1>:

1. Basis of Design: Bobrick; Model B-5806 Series x 42
2. Mounting: Flanges with concealed fasteners.
3. Material: Stainless steel, 0.05 inch thick.
 - a. Finish: Smooth, ASTM A480/A480M No. 4 finish (satin)
4. Outside Diameter: 1-1/4 inches (38 mm).
5. Configuration and Length: Straight, 42 inches long

E. Grab Bar <GB -2>:

1. Basis of Design: Bobrick; Model B-5806 Series x 36
2. Mounting: Flanges with concealed fasteners.
3. Material: Stainless steel, 0.05 inch thick.
 - a. Finish: Smooth, ASTM A480/A480M No. 4 finish (satin)
4. Outside Diameter: 1-1/4 inches.
5. Configuration and Length: Straight, 36 inches long

F. Grab Bar <GB-3>:

1. Basis of Design: Bobrick; Model B-5806 Series x 18
2. Mounting: Flanges with concealed fasteners.
3. Material: Stainless steel, 0.05 inch thick.
 - a. Finish: Smooth, ASTM A480/A480M No. 4 finish (satin)
4. Outside Diameter: 1-1/4 inches.
5. Configuration and Length: Straight, 18 inches long

G. Sanitary-Napkin Disposal Unit <SN -1>:

1. Basis of Design: Bobrick, Model B-244
2. Mounting: Surface mounted.
3. Door or Cover: Self-closing, disposal-opening cover and hinged face panel with tumbler lockset.
4. Receptacle: Removable.
5. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin)

H. Paper Towel Dispenser <PT-1>:

1. **Basis of Design: Janico, Model 2802**
2. Size: 11.5" x 8.75" x 13.5"
3. Manufacturer's standard rigid, tamper and theft resistant.

4. Material Finish - Black

I. Mirror Unit <MI>:

1. **Basis of Design: Bobrick, Model B290**
2. Frame: Stainless steel angle, 0.05 inch thick with satin finish
 - a. Corners: Welded and ground smooth.
3. Size: 24 inches x 36 inches.
4. Hangers: Manufacturer's standard rigid, tamper and theft resistant.
5. Furnish additional stock of 12 mirrors

2.3 MATERIALS

- A. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304, 0.031-inch-minimum nominal thickness unless otherwise indicated.
- B. Brass: ASTM B19, flat products; ASTM B16/B16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B30, castings.
- C. Steel Sheet: ASTM A1008/A1008M, Designation CS (cold rolled, commercial steel), 0.036-inch-minimum nominal thickness.
- D. Galvanized-Steel Sheet: ASTM A653/A653M, with G60 hot-dip zinc coating.
- E. Galvanized-Steel Mounting Devices: ASTM A153/A153M, hot-dip galvanized after fabrication.
- F. Fasteners: Screws, bolts, and other devices of same material as accessory unit, unless otherwise recommended by manufacturer or specified in this Section, and tamper and theft resistant where exposed, and of stainless or galvanized steel where concealed.
- G. Mirrors: ASTM C1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

2.4 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.
- B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories in accordance with manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
 - 1. Remove temporary labels and protective coatings.
- B. Grab Bars: Install to comply with specified structural-performance requirements.
- C. Shower Seats: Install to comply with specified structural-performance requirements.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Clean and polish exposed surfaces in accordance with manufacturer's written instructions.

END OF SECTION 102800

SECTION 224100 - GENERAL PLUMBING FIXTURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes replacement Plumbing fixtures and faucets
 - 1. Lavatories
 - 2. Faucets
 - 3. Water closets, wall and floor mounted,
 - 4. Child Water closets, wall and floor mounted
 - 5. Urinals

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for lavatories.

1.3 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Counter cutout templates for mounting of counter-mounted plumbing fixtures.
- B. Sample Warranty: For special warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For plumbing fixtures and faucets to include in emergency, operation, and operation and maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Faucet Washers and O-Rings: Equal to 10 percent of amount of each type and size installed.
 - 2. Faucet Cartridges and O-Rings: Equal to 5 percent of amount of each type and size installed.
 - 3. Flushometer-Tank Repair Kits: Equal to 5 percent of amount of each type installed, but no fewer than two of each type.
 - 4. Toilet Seats: Equal to 5 percent of amount of each type installed.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide fixtures as specified in schedule, with options and accessories as scheduled and to suit project conditions. Alternate manufacturers will be considered assuming alternate meets basis of design intent, construction and performance.

2.2 GROUT

- A. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
- B. Characteristics: Nonshrink; recommended for interior and exterior applications.
- C. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.
- D. Packaging: Premixed and factory packaged.

2.3 SCHEDULE OF FIXTURES

- A. See Drawing Schedule

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Remove existing fixture as indicated in schedule of work.
- B. Examine existing roughing-in of water-supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before plumbing-fixture installation.
- C. Examine walls, floors, cabinets, and counters for suitable conditions where fixtures will be installed.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Remove existing fixture as indicated in schedule of work. Inspect existing rough in and clean area and prepare as needed to be level and plumb to receive new fixture.
- B. Install plumbing fixtures level and plumb according to roughing-in drawings.
- C. Install floor-mounted water closets on closet flange attachments to drainage piping.

- D. Install counter-mounting fixtures in and attached to casework.
- E. Install pedestal lavatories on pedestals and secured to appropriate blocking in wall.
- F. Install water-supply piping with stop on each supply to each fixture to be connected to water distribution piping. Attach supplies to supports or substrate within pipe spaces behind fixtures. Install stops in locations where they can be easily reached for operation.
 - 1. Exception: Use ball, gate, or globe valves if supply stops are not specified with fixture. Comply with valve requirements specified in Section 220523 "General-Duty Valves for Plumbing Piping."
- G. Install tanks for accessible, tank-type water closets with lever handle mounted on wide side of compartment.
- H. Install toilet seats on water closets.
- I. Install faucet flow-control fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.
- J. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible lavatories and sinks.
- K. Seal joints between plumbing fixtures, counters, floors, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color.

3.3 ADJUSTING

- A. Operate and adjust plumbing fixtures and controls. Replace damaged and malfunctioning fixtures, fittings, and controls.
- B. Adjust water pressure at faucets to produce proper flow.

3.4 CLEANING AND PROTECTION

- A. After completing installation of plumbing fixtures, inspect and repair damaged finishes.
- B. Clean plumbing fixtures, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.
- C. Provide protective covering for installed plumbing fixtures and fittings.
- D. Do not allow use of plumbing fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION 224100

SECTION 265100 - INTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Replacement of existing interior light fixtures with interior solid-state luminaires that use LED technology.
 - 2. Lighting fixture supports.

1.3 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color-rendering index.
- C. Fixture: See "Luminaire."
- D. IP: International Protection or Ingress Protection Rating.
- E. LED: Light-emitting diode.
- F. Lumen: Measured output of lamp and luminaire, or both.
- G. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include data on features, accessories, and finishes.
 - 2. Include physical description and dimensions of luminaires.

1.5 INFORMATIONAL SUBMITTALS

- A. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- B. Product Certificates: For each type of luminaire.

- C. Product Test Reports: For each luminaire, for tests performed by a qualified testing agency.
- D. Sample warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For luminaires and lighting systems to include in operation and maintenance manuals.
 - 1. Provide a list of all lamp types used on Project; use ANSI and manufacturers' codes.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

1.8 WARRANTY

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.
- B. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Luminaires shall withstand the effects of earthquake motions determined according to **ASCE/SEI 7**.
- B. Seismic Performance: Luminaires and lamps shall be labeled vibration and shock resistant.

2.2 MANUFACTURERS

- A. Products: Basis of Design Manufacturer – Columbia Lighting.
 - 1. Acceptable Alternate Manufacturers Subject to compliance with requirements, provide products as indicated in lighting schedule

2.3 LUMINAIRE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. NRTL Compliance: Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by an NRTL.

- C. Recessed Fixtures: Comply with NEMA LE 4.
- D. CRI of **minimum 80**.
- E. Rated lamp life of **50,000** hours.
- F. Lamps dimmable from 100 percent to 0 percent of maximum light output.
- G. Internal driver.
- H. Nominal Operating Voltage: **120 V ac**.
 - 1. Lens Thickness: At least **0.125 inch (3.175 mm)** minimum unless otherwise indicated.

2.4 MATERIALS

- A. Metal Parts:
 - 1. Free of burrs and sharp corners and edges.
 - 2. Sheet metal components shall be steel unless otherwise indicated.
 - 3. Form and support to prevent warping and sagging.
- B. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.
- C. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Locate labels where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.
 - 1. Label shall include the following lamp characteristics:
 - a. "USE ONLY" and include specific lamp type.
 - b. Lamp diameter, shape, size, wattage, and coating.
 - c. CCT and CRI for all luminaires.

2.5 METAL FINISHES

- A. Variations in finishes are unacceptable in the same piece. Variations in finishes of adjoining components are acceptable if they are within the range of approved Samples and if they can be and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Remove existing Luminaires

- B. Examine substrates, areas, and conditions, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- C. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before fixture installation. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with NECA 1.
- B. Install replacement luminaires level, plumb, and square with ceilings and walls. Use existing mounting locations and supports as appropriate. Notify Engineer if any mounting locations are unsuitable for new fixtures. Engineer to provide direction.
- C. Install lamps in each luminaire.
- D. Wall-Mounted Luminaire Support:
 - 1. Attached to structural members in walls.
 - 2. Contractor to verify attachment method. Do not attach luminaires directly to gypsum board.
- E. Ceiling-Mounted Luminaire Support:
 - 1. Ceiling mount to existing support. Contractor to verify attachment method. Do not attach luminaires directly to gypsum board.
 - 2. Suspended Luminaire Support:
 - 3. Pendants and Rods: Where longer than 48 inches (1200 mm), brace to limit swinging.
 - 4. Stem-Mounted, Single-Unit Luminaires: Suspend with twin-stem hangers. Support with approved outlet box and accessories that hold stem and provide damping of luminaire oscillations. Support outlet box vertically to building structure using approved devices.
 - 5. Do not use ceiling grid as support for pendant luminaires. Connect support wires or rods to building structure.
- F. Ceiling-Grid-Mounted Luminaires:
 - 1. Secure to existing outlet box.

3.3 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
 - 2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.

- B. Luminaire will be considered defective if it does not pass operation tests and inspections.
- C. Prepare test and inspection reports.

3.4 Lighting Schedule

- A. See drawing Schedule and Fixture cutsheets

END OF SECTION 265119



November 28, 2022

Mr. Irvin Maldonado
Director of Facilities/Operations
Chester Upland School District
232 West 9th Street
Chester, PA 19013

RE: Hazardous Materials Investigation
Chester Upland School District – Chester Upland School of the Arts
E2S Project 1450.0001

Dear Maldonado:

Element Environmental Solutions, Inc. (E2S) was contracted by the Chester Upland School District to perform a comprehensive hazardous materials investigation in support of the proposed renovations to the Chester Upland School of the Arts located at 501 West 9th Street, Chester, Pennsylvania. The purpose of the investigation was to identify any hazardous materials that exist at the building, both interior and exterior, to determine what regulatory actions, if any, must be taken prior to the scheduled renovations to the building.

Introduction

Representatives from E2S were on site on Tuesday, November 8, 2022, to perform the hazardous materials investigation. The investigation included a visual inspection and sampling for asbestos-containing materials (ACM), a lead-based paint (LBP) inspection, a visual inspection for mercury and PCB-containing devices and equipment, PCB in Caulk sampling, and any other potentially hazardous or environmentally regulated materials. Our representatives, Messrs. David Bertsch, Michael Seifrit, and Andrew Houck, are Environmental Protection Agency (EPA) certified Asbestos Building Inspectors and are licensed as such by the Pennsylvania Department of Labor and Industry (Pa DLI). Mr. Bertsch is also an EPA-certified and PA-licensed Asbestos Management Planner and Lead Inspector/Risk Assessor. See Appendix B for copies of licenses.

Summary

E2S representatives performed an initial walkthrough of the existing Chester Upland School of the Arts, interior and exterior, to locate suspect ACM, perform the LBP testing, and locate suspect light ballasts, light tubes, electronic devices, etc., and documented all findings on field data forms. E2S utilized drawings provided by Schrader Group Architecture, LLC for the existing building layouts. Based upon the visual inspection, bulk samples were collected of suspect ACM and were submitted to an accredited laboratory for asbestos analysis by Polarized Light Microscopy (PLM). The laboratory utilized for this project was: EMSL Analytical, Inc. located in Cinnaminson, New Jersey. EMSL is an American Industrial Hygiene Association (AIHA) and National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory for asbestos PLM analysis.

Samples were not collected of suspect materials for mercury or liquid PCB's (ballasts, transformer oil, etc.) due to destructive sampling methods required and potential electrical hazards; however, E2S visually inspected labels and devices for documentation pertaining to the content of the materials. If required, assumptions were made to err on the side of caution when handling and disposing of these materials. One (1) composite sample of exterior caulk was collected for bulk PCB analysis.

The results and findings of the investigation are summarized below and on the referenced tables, for each material referenced above.

Asbestos

The following suspect material was identified and assumed to contain asbestos at EPA-regulated levels (>1%):

- *Fire Doors (Core Insulation)*

The following suspect materials were identified, sampled, and determined to contain asbestos at EPA-regulated levels (>1%):

- **Black Mastic (Under Carpet)**
- **Mud Fitting Insulation on Fiberglass-Insulated Pipe (FGIP)**
- **Gray 9" x 9" Floor Tile**
- **Beige 1' x 1' Floor Tile Mastic (Black)**
- **White w/Streaks 1' x 1' Floor Tile Mastic (Black)**
- **White w/Black Streaks 1' x 1' Floor Tile and Mastic (Black)**
- **Gray 1' x 1' Floor Tile and Mastic (Black)**
- **Green 9" x 9" Floor Tile**

The following suspect materials were identified, sampled, and determined **NOT** to contain asbestos at EPA-regulated levels (>1%):

- Mastic Ends on Fiberglass-Insulated Pipe (FGIP)
- Black 1' x 1' Floor Tile and Mastic (Black)
- Ceiling Plaster (All Layers)
- Debris on Ceiling Tiles (Brown/Various)
- 2' x 4' Ceiling Tile (Dot-Faced)
- Painted Concrete Floor and Leveler
- Foil Wrap on FGIP (Tan/Black/Silver)
- Carpet Mastic (Yellow)
- Spline Ceiling Tile
- Fire Stop Sealant
- Gray 9" x 9" Floor Tile Mastic (Black)
- Beige w/Streaks 1' x 1' Floor Tile and Mastic (Black)
- Floor Filler/Epoxy
- Painted Concrete/Epoxy
- Boiler Rib Gaskets – Smith Boiler (Old) and Smith 28 High Efficiency Boiler (Newer)

- Spline Ceiling Tile and Adhesive (Brown)
- Yellow/Orange 1' x 1' Floor Tile and Mastic (Yellow)
- Layered Paper Pipe Insulation (LPPI)
- Beige 1' x 1' Floor Tile
- Science Countertops
- Wall Plaster (All Layers)
- Blue/Gray 1' x 1' Floor Tile and Mastic (Yellow)
- Cove Base Mastic (Beige)
- Gray w/Streaks 1' x 1' Floor Tile and Mastic (Black/Clear)
- White w/Streaks 1' x 1' Floor Tile
- Ceramic Tile Adhesive (White/Yellow/Green)
- Drywall/Joint Compound
- Green 9" x 9" Floor Tile Mastic (Black/Gray/Yellow)
- Slate-Like Cove Base/Wall Base
- Exterior Window Caulk
- Exterior Door Caulk
- Exterior Soffit Caulk
- Exterior Window Trim Caulk
- Exterior Rough Plaster Soffit

*Roofing material was not sampled during this investigation. If roof sampling is requested, E2S recommends a roofing contractor be on site to patch any locations that are sampled.

Please refer to Table 1 – Asbestos Bulk Sample Analytical Results – Chester Upland School of the Arts, for a summary of asbestos bulk sample analytical results.

Lead

E2S performed lead-based paint testing of various painted surfaces and components throughout Chester Upland School of the Arts. Testing was performed using an Innov-X/Olympus Delta Series hand-held lead analyzer, Model DC-2000 and Serial Number 560920, using X-Ray Fluorescence (XRF) state-of-the-art technology. Testing was performed in accordance with applicable EPA and HUD standards and guidelines pertaining to lead-based paint inspections. The EPA/HUD definition of LBP (1.0 mg/cm²) was used as a threshold to identify LBP.

The following painted surfaces were identified, tested, and determined to contain lead at EPA/HUD regulated, lead-based paint (LPB) levels, as defined above:

- Throughout Bathrooms – Ceramic Wall Tiles (Various Colors)
- Second Floor Hallway – Wooden Old Wall Cove Trim Paint (White)
- **Exterior – Wooden Window Frame Paint (Mint Green)***

***The exterior window frame paint was sampled via lead paint chip and analyzed using Flame Atomic Absorption Spectroscopy (Flame AAS). See Appendix A for laboratory analytical report, sample analysis result was 31% by weight, which is greater than the EPA/HUD definition of LBP of 0.5% by weight using laboratory analysis.**

All other painted surfaces and components tested were determined **NOT** to contain lead at EPA/HUD lead-based paint (LPB) levels, as defined above, however some components did contain detectable levels of lead (Refer to Table 3 – XRF Results for specific locations and components tested). Surfaces containing any amounts of lead may be regulated by Occupational Health and Safety Administration (OSHA) and all construction work that impacts painted components containing lead shall be performed in accordance with the OSHA Lead-in Construction Standard (29 CFR 1926.62), as applicable to the work being performed; and a proper waste management plan shall be utilized to certify that the waste is tested for hazardous waste classification, as applicable, and properly disposed or recycled. Contractors working on the project are responsible for fulfilling all applicable OSHA requirements pertaining to lead, as well as all other applicable federal, state or local requirements or regulations pertaining to lead-in construction.

PCB's, Mercury, and Other Suspect Hazardous Materials

One (1) composite sample of various exterior caulk was collected for bulk PCB analysis and the laboratory analyzed the sample via Method SW 846-8082A for the nine (9) most common PCB types. PCBs were detected in Aroclor-1254 (1.4 mg/kg, ppm) and Aroclor-1260 (0.41 mg/kg, ppm), at levels well below the EPA threshold for PCB bulk product waste for caulk of greater than or equal to (\geq) 50 mg/kg, or parts per million (ppm). No PCBs were detected in Aroclor-1016, 1221, 1232, 1242, 1248, 1262, and 1268. Please refer to Table 4 – PCB in Caulk Sample Analytical Results – Chester Upland School of the Arts for a summary of exterior caulk composite sample analytical results for PCBs.

Light ballasts were randomly inspected, and ballasts visually checked were determined to be either Sylvania Quicktronic Electronic ballasts or Robertson Transformer Company Class P ballasts, with the "No PCB's" notation. However, not all ballasts were checked, and PCB ballasts (ballasts not labeled "No PCB's") may be present. The lighting systems were of various type, and types of ballasts varied depending on type of light fixtures. The ballasts which are demarcated as non-PCB containing may be recycled as non-PCB ballasts in accordance with applicable industry standards for those types of ballasts. PCB ballasts, if encountered, should be recycled as PCB ballasts in a facility that accepts PCB ballasts as universal waste. Any leaking ballasts would need to be disposed of as hazardous waste unless testing is performed to classify the waste for PCB's.

Fluorescent light tubes were also visually inspected, and those visually checked were determined to be either Topaz (with the Mercury elemental symbol Hg) or Pinnacle T8 LED tubes, and are assumed to contain some amounts of mercury that could deem them "hazardous waste" for disposal purposes. E2S recommends that all tubes be removed prior to demolition of the lighting fixtures, if included in the renovation scope of work, and sent for recycling as universal waste, to a facility that accepts mercury-containing light tubes as part of their universal waste program.

E2S visually inspected electrical and mechanical equipment and devices and identified one (1) existing General Electric Type QL NEMA Class AA "Dry Type" transformer located in the 1st Floor (Lower Level) Electrical Room. Dry type transformers use air for cooling and do not contain suspect PCB oils.

E2S also identified numerous thermostats, thermometers, gauges, high voltage switches, exit signs, smoke detectors, refrigerants, etc. that are assumed to contain various suspect hazardous materials and recommend that they be recycled at a facility that accepts each particular material for recycling, or disposed of properly in accordance with applicable requirements, if recycling is not an option.

Laboratory analytical reports with PLM asbestos bulk sample results, Flame AAS lead paint chip sample results, and PCB in Caulk (Bulk) sample results from EMSL can be found in Appendix A, and accreditations (certifications and licenses) for E2S representatives can be found in Appendix B, along with XRF instrumentation calibration. Please refer to Table 2 for a summary of cost estimates for abatement of identified ACM and recycling of suspected hazardous materials.

Thank you for the opportunity to present Element Environmental Solutions (E2S) as a partner in your environmental management efforts. Should you have questions or require additional information, please contact me.

Sincerely,
E2S, Inc.

A handwritten signature in cursive script that reads "Daniel Gensemer".

Daniel Gensemer
Principal, IAQ

Table 1 - Asbestos Bulk Sample Analytical Results - Chester Upland School of the Arts

Sample Number	Floor	Location	Material Description	Analytical Result (PLM)
CUSA-11/8-01BK	Fourth	Hallway	Mastic End on FGIP	None Detected
CUSA-11/8-02BK-Floor Tile	Fourth	Room 311 Storage	Black 1' x 1' Floor Tile	None Detected
CUSA-11/8-02BK-Mastic	Fourth	Room 311 Storage	Black 1' x 1' Floor Tile Mastic (Black)	None Detected
CUSA-11/8-03BK-Plaster	Fourth	Hallway	Ceiling Plaster (Gray Layer)	None Detected
CUSA-11/8-03BK-Skim Coat	Fourth	Hallway	Ceiling Plaster (White Layer)	None Detected
CUSA-11/8-03BK-Texture	Fourth	Hallway	Ceiling Plaster (Tan/White Texture Layer)	None Detected
CUSA-11/8-04BK	Fourth	Hallway	Debris on Ceiling Tile (Brown/Various)	None Detected
CUSA-11/8-05BK	Fourth	Hallway	2' x 4' Ceiling Tile (Dot Faced)	None Detected
CUSA-11/8-06BK-Concrete	Fourth	Hallway	Painted Concrete Floor (Gray/Tan/Red)	None Detected
CUSA-11/8-06BK-Leveler	Fourth	Hallway	Floor Leveler (Tan/White)	None Detected
CUSA-11/8-07BK	Fourth	Room 304	Black Mastic (Under Carpet)	3% Chrysotile
CUSA-11/8-08BK	Third	Women's Faculty (Wall Chase)	Foil Wrap on FGIP (Tan/Black/Silver)	None Detected
CUSA-11/8-09BK	Third	Women's Faculty (Wall Chase)	Mud Fitting Insulation on FGIP	5% Chrysotile
CUSA-11/8-10BK	Third	Room 205	Carpet Mastic (Yellow)	None Detected
CUSA-11/8-11BK	Third	Stair at Room 210	Spline Ceiling Tile	None Detected
CUSA-11/8-12BK	Second	Hallway	Fire Stop Sealant (Red)	None Detected
CUSA-11/8-13BK-Floor Tile	Stair	Stair #4	Gray 9" x 9" Floor Tile	6% Chrysotile
CUSA-11/8-13BK-Mastic	Stair	Stair #4	Gray 9" x 9" Floor Tile Mastic (Black)	None Detected
CUSA-11/8-14BK-Floor Tile	First	Room 009	Beige w/Streaks 1' x 1' Floor Tile	None Detected
CUSA-11/8-14BK-Mastic	First	Room 009	Beige w/Streaks 1' x 1' Floor Tile Mastic (Black)	None Detected
<i>CUSA-11/8-15BK</i>	<i>First</i>	<i>Room 009</i>	<i>Floor Filler/Epoxy (Gray/Various/Black)</i>	<i><1% Chrysotile</i>
CUSA-11/8-16BK-Concrete	Stair	Stair #1	Painted Concrete (Tan/Blue)	None Detected
CUSA-11/8-16BK-Epoxy	Stair	Stair #1	Epoxy Floor (Clear)	None Detected
CUSA-11/8-17BK-Concrete	First	Room 001 (Under Carpet)	Painted Concrete (Brown/Gray)	None Detected
CUSA-11/8-17BK-Epoxy	First	Room 001 (Under Carpet)	Epoxy Floor (Yellow/Clear)	None Detected
CUSA-11/8-18BK	First	Boiler Room	Boiler Rib Gasket (Smith Boiler - Old)	None Detected
CUSA-11/8-19BK	First	Boiler Room	Boiler Rib Gasket (Smith 28 H.E. Boiler - Newer)	None Detected
CUSA-11/8-20BK	First	Room 005	Mastic End on FGIP	None Detected
CUSA-11/8-21BK-Ceiling Tile	First	Multipurpose Room	Spline Ceiling Tile	None Detected
CUSA-11/8-21BK-Adhesive	First	Multipurpose Room	Spline Ceiling Tile Adhesive (Brown)	None Detected
CUSA-11/8-22BK-Floor Tile	First	Multipurpose Room	Yellow 1' x 1' Floor Tile	None Detected
CUSA-11/8-22BK-Mastic	First	Multipurpose Room	Yellow 1' x 1' Floor Tile Mastic (Yellow)	None Detected
CUSA-11/8-22BK-Floor Tile 2	First	Multipurpose Room	Orange 1' x 1' Floor Tile	None Detected
CUSA-11/8-22BK-Mastic 2	First	Multipurpose Room	Orange 1' x 1' Floor Tile Mastic (Yellow)	None Detected
CUSA-11/8-23BK	First	Hallway	Layered Paper Pipe Insulation (LPPI)	None Detected

FGIP = Fiberglass Insulated Pipe

EPA Definition of Asbestos-Containing Material (ACM) = >1% (line items BOLD)

E2S Project 1450.0001

11/22/2022

Table 1 - Asbestos Bulk Sample Analytical Results - Chester Upland School of the Arts

Sample Number	Floor	Location	Material Description	Analytical Result (PLM)
CUSA-11/8-24BK-Floor Tile	Fourth	Room 307	Beige 1' x 1' Floor Tile	None Detected
CUSA-11/8-24BK-Mastic	Fourth	Room 307	Beige 1' x 1' Floor Tile Mastic (Black)	2% Chrysotile
CUSA-11/8-25BK	Fourth	Room 311	Science Countertop	None Detected
CUSA-11/8-26BK-Plaster	Fourth	Custodial Closet - 306	Wall Plaster (Gray Layer)	None Detected
CUSA-11/8-26BK-Skim Coat	Fourth	Custodial Closet - 306	Wall Plaster (White Layer)	None Detected
CUSA-11/8-26BK-Texture	Fourth	Custodial Closet - 306	Wall Plaster (White Texture Layer)	None Detected
CUSA-11/8-27BK-Floor Tile	Fourth	Room 314A	Blue/Gray 1' x 1' Floor Tile	None Detected
CUSA-11/8-27BK-Mastic	Fourth	Room 314A	Blue/Gray 1' x 1' Floor Tile Mastic (Yellow)	None Detected
CUSA-11/8-28BK	Fourth	Room 314A	Cove Base Mastic (Beige)	None Detected
CUSA-11/8-29BK-Floor Tile	Fourth	Room 309	Gray w/Streaks 1' x 1' Floor Tile	None Detected
<i>CUSA-11/8-29BK-Mastic</i>	<i>Fourth</i>	<i>Room 309</i>	<i>Gray w/Streaks 1' x 1' Floor Tile Mastic (Black/Clear)</i>	<i><1% Chrysotile</i>
CUSA-11/8-30BK-Floor Tile	Third	Room 208	White w/Streaks 1' x 1' Floor Tile	None Detected
CUSA-11/8-30BK-Mastic	Third	Room 208	White w/Streaks 1' x 1' Floor Tile Mastic (Black)	5% Chrysotile
CUSA-11/8-31BK	Second	Boy's Restroom	Ceramic Tile Adhesive (White/Yellow/Green)	None Detected
CUSA-11/8-32BK-Drywall	Second	Room 112	Drywall	None Detected
CUSA-11/8-32BK-JC	Second	Room 112	Joint Compound	None Detected
CUSA-11/8-33BK-Floor Tile	Fourth	Room 312	White w/Black Streaks 1' x 1' Floor Tile	4% Chrysotile
CUSA-11/8-33BK-Mastic	Fourth	Room 312	White w/Black Streaks 1' x 1' Floor Tile Mastic (Black)	5% Chrysotile
CUSA-11/8-34BK-Floor Tile	Third	Room 202	Gray 1' x 1' Floor Tile	4% Chrysotile
CUSA-11/8-34BK-Mastic	Third	Room 202	Gray 1' x 1' Floor Tile Mastic (Black)	3% Chrysotile
CUSA-11/8-35BK-Floor Tile	Second	Room 127	Green 9" x 9" Floor Tile	3% Chrysotile
CUSA-11/8-35BK-Mastic	Second	Room 127	Green 9" x 9" Floor Tile Mastic (Black/Yellow)	None Detected
CUSA-11/8-35BK-Mastic 2	Second	Room 127	Green 9" x 9" Floor Tile Mastic (Gray/Yellow)	None Detected
CUSA-11/8-36BK-Plaster	Second	Room 112	Wall Plaster (Gray Layer)	None Detected
CUSA-11/8-36BK-Skim Coat	Second	Room 112	Wall Plaster (White Layer)	None Detected
CUSA-11/8-36BK-Mastic	Second	Room 112	Wall Plaster (Brown/Yellow Mastic Layer)	None Detected
CUSA-11/8-37BK	Third	Hallway	Slate-Like Cove Base/Wall Base	None Detected
CUSA-11/8-38BK	Exterior	Exterior	Window Caulk (Brown/Gray)	None Detected
CUSA-11/8-39BK	Exterior	Exterior	Door Caulk (Gray)	None Detected
CUSA-11/8-40BK	Exterior	Exterior	Soffit Caulk (White)	None Detected
CUSA-11/8-41BK	Exterior	Exterior	Window Trim Caulk (Gray)	None Detected
CUSA-11/8-42BK	Exterior	Exterior	Rough Plaster Soffit (White)	None Detected

Table 2 - Summary of Findings and Estimated Removal Costs - Chester Upland School of the Arts

Location	Material Description	Estimated Quantity	Estimated Cost
2nd Floor Office Wing/Stair #4	9" x 9" Floor Tile and non-ACM Mastic	965 S.F.	\$5,800.00
2nd Floor Office Wing	9" x 9" Floor Tile and non-ACM Mastic (Under Carpet)	895 S.F.	\$5,800.00
2nd Floor Health Suite	9" x 9" Floor Tile and non-ACM Mastic (Under 1' x 1' Floor Tile)	260 S.F.	\$1,700.00
4th Floor - Room 304	Black Mastic (Under Carpet)	450 S.F.	\$2,000.00
Throughout	1' x 1' Floor Tile (some non-ACM) and Black Mastic	20,850 S.F.	\$125,000.00
2nd Floor - Room 105 (2 adjacent rooms)	1' x 1' Floor Tile (non-ACM) and Black Mastic (Under Carpet)	1,420 S.F.	\$9,200.00
2nd Floor - Room 112 (portion of room)	1' x 1' Floor Tile (non-ACM) and Black Mastic (Assumed Under Wood)	1,000 S.F.	\$7,000.00
1st Floor (Accessible)	Mud Fitting Insulation on Fiberglass-Insulated Pipe (FGIP)	20 Fittings	\$1,000.00
Assumed inside Bathroom Walls and Pipe Chases	Mud Fitting Insulation on Fiberglass-Insulated Pipe (FGIP) (Demo Required)	240 Fittings	\$12,000.00
1st Floor Mechanical/Storage Spaces	Fire Doors (Assumed ACM Core Insulation)	10 Doors	\$2,500.00
Mobilization Fees (1 per floor)		4	\$6,000.00
TOTAL - Asbestos Abatement - Estimated Removal Costs*			\$178,000.00
Throughout Building	Mercury-Containing Light Tubes (Assumed)	2,200	\$2,200.00
Throughout Building	Light Ballasts (No PCB's)	800	\$1,600.00
Throughout Building	Miscellaneous Equipment/Devices	N/A	TBD
TOTAL - Hazardous Materials (Recycling fees only, does not include labor for removal or transportation fees)			\$3,800.00

Table 3 - XRF Lead Testing Results - Chester Upland School of the Arts

Date	Test #	Floor	Location	Component	Side	Substrate	Paint Color	Condition	Result (mg/cm ²)	Precision (+/-)	Pass/Fail Standard
8-Nov-22	1-5			STANDARDIZATION/CALIBRATION							PASS
8-Nov-22	6	Fourth	Room 311	Door	N	Wood	Yellow	Intact	0.00	0.00	Negative
8-Nov-22	7	Fourth	Room 311	Door Frame	N	Metal	Brown	Intact	0.00	0.00	Negative
8-Nov-22	8	Fourth	Room 311	Wall	N	Plaster	Cream	Intact	0.00	0.00	Negative
8-Nov-22	9	Fourth	Room 311	Wall	E	Plaster	Cream	Intact	0.00	0.00	Negative
8-Nov-22	10	Fourth	Room 311	Ceiling	N/A	Plaster	Cream	Intact	0.06	0.01	Negative
8-Nov-22	11	Fourth	Room 311	Wall	S	Plaster	Blue	Intact	0.01	0.00	Negative
8-Nov-22	12	Fourth	Room 311	Wall	W	Plaster	Cream	Intact	0.03	0.00	Negative
8-Nov-22	13	Fourth	Room 311	Window Frame	W	Wood	White	Intact	0.07	2.00	Negative
8-Nov-22	14	Fourth	Room 311	Window Sill	W	Wood	White	Intact	0.29	4.00	Negative
8-Nov-22	15	Fourth	4th Floor Hallway	Door	N	Wood	Beige	Intact	0.00	0.00	Negative
8-Nov-22	16	Fourth	4th Floor Hallway	Door Frame	N	Metal	Brown	Intact	0.01	0.00	Negative
8-Nov-22	17	Fourth	4th Floor Hallway	Wall	N	Plaster	Cream	Intact	0.00	0.00	Negative
8-Nov-22	18	Fourth	4th Floor Hallway	Lockers	N	Metal	Cream	Intact	0.00	0.00	Negative
8-Nov-22	19	Fourth	4th Floor Hallway	Wall	S	Plaster	Cream	Intact	0.00	0.00	Negative
8-Nov-22	20	Fourth	4th Floor Hallway	Lockers	S	Metal	Green	Intact	0.12	2.00	Negative
8-Nov-22	21	Fourth	4th Floor Hallway	Cove Base	S	Concrete	Beige	Intact	0.19	2.00	Negative
8-Nov-22	22	Fourth	4th Floor Hallway	Floor	N/A	Concrete	Beige	Intact	0.00	0.00	Negative
8-Nov-22	23	Fourth	Room 316	Window Sash	N	Wood	White	Intact	0.00	0.00	Negative
8-Nov-22	24	Fourth	Room 316	Window Frame	N	Wood	White	Intact	0.14	2.00	Negative
8-Nov-22	25	Fourth	Room 316	Window Sill	N	Wood	White	Intact	0.00	0.00	Negative
8-Nov-22	26	Fourth	Room 316	Unit Ventilator Cover	N	Metal	Cream	Intact	0.00	0.00	Negative
8-Nov-22	27	Fourth	Room 316	Wall	E	Plaster	Light Blue	Intact	0.00	0.00	Negative
8-Nov-22	28	Fourth	Room 316	Wall	S	Plaster	Cream	Intact	0.00	0.00	Negative
8-Nov-22	29	Fourth	Room 316	Wall	W	Plaster	Cream	Intact	0.00	0.00	Negative
8-Nov-22	30	Fourth	Room 316	Wall Hatch Door	S	Metal	Cream	Intact	0.00	0.00	Negative
8-Nov-22	31	Fourth	Room 314A	Window Sash	N	Wood	Brown	Intact	0.00	0.00	Negative
8-Nov-22	32	Fourth	Room 314A	Window Frame	N	Wood	White	Intact	0.24	3.00	Negative
8-Nov-22	33	Fourth	Room 314A	Window Sill	N	Wood	White	Intact	0.00	0.00	Negative
8-Nov-22	34	Fourth	Room 314A	Wall	N	Block	White	Intact	0.00	0.00	Negative
8-Nov-22	35	Fourth	Room 314A	Wall	E	Plaster	Cream	Intact	0.00	0.00	Negative
8-Nov-22	36	Fourth	Room 314A	Wall	S	Drywall	Cream	Intact	0.00	0.00	Negative
8-Nov-22	37	Fourth	Room 314A	Wall	W	Plaster	Cream	Intact	0.20	0.00	Negative
8-Nov-22	38	Fourth	Room 314A	Door	S	Wood	Stained	Intact	0.00	0.00	Negative
8-Nov-22	39	Fourth	Room 314A	Door Frame	S	Metal	Brown	Intact	0.11	0.02	Negative
8-Nov-22	40	Fourth	4th Floor Men's Bathroom	Wall	N	Ceramic Tile	Olive	Intact	2.89	0.13	Positive
8-Nov-22	41	Fourth	4th Floor Men's Bathroom	Wall	E	Ceramic Tile	Olive	Intact	2.16	0.12	Positive
8-Nov-22	42	Fourth	4th Floor Men's Bathroom	Wall	S	Ceramic Tile	Olive	Intact	2.11	0.12	Positive
8-Nov-22	43	Fourth	4th Floor Men's Bathroom	Wall	W	Ceramic Tile	Olive	Intact	2.28	0.11	Positive
8-Nov-22	44	Fourth	4th Floor Men's Bathroom	Floor	N/A	Ceramic Tile	Olive	Intact	0.00	0.00	Negative
8-Nov-22	45	Fourth	4th Floor Men's Bathroom	Vanity	N/A	Wood	Cream	Intact	0.00	0.00	Negative
8-Nov-22	46	Fourth	4th Floor Men's Bathroom	Door	S	Wood	Green	Intact	0.00	0.00	Negative
8-Nov-22	47	Fourth	4th Floor Men's Bathroom	Door Frame	S	Metal	Brown	Intact	0.02	0.00	Negative
8-Nov-22	48	Fourth	West Stairwell	Window Frame	N	Wood	White	Intact	0.02	0.00	Negative
8-Nov-22	49	Fourth	West Stairwell	Wall	N	Plaster	White	Intact	0.15	0.02	Negative
8-Nov-22	50	Fourth	West Stairwell	Wall	E	Plaster	White	Intact	0.01	0.00	Negative
8-Nov-22	51	Fourth	West Stairwell	Wall	S	Block	White	Intact	0.01	0.00	Negative
8-Nov-22	52	Fourth	West Stairwell	Wall	W	Plaster	White	Intact	0.00	0.00	Negative
8-Nov-22	53	Fourth	West Stairwell	Door	S	Metal	Brown	Intact	0.07	0.01	Negative
8-Nov-22	54	Fourth	West Stairwell	Door Frame	S	Metal	Brown	Intact	0.03	0.00	Negative
8-Nov-22	55	Fourth	West Stairwell	Fire Box	W	Metal	Red	Intact	0.01	0.00	Negative
8-Nov-22	56	Fourth	West Stairwell	Floor	N/A	Concrete	Blue	Intact	0.00	0.00	Negative
8-Nov-22	57	Fourth	West Stairwell	Stair Tread	N/A	Concrete	Blue	Intact	0.00	0.00	Negative

LOD = Limit of Detection

EPA/HUD definition of lead-based paint (LBP) = >1.0 mg/cm² (Line Items BOLD)

E2S Project 1450.0001

11/9/2022

Table 3 - XRF Lead Testing Results - Chester Upland School of the Arts

Date	Test #	Floor	Location	Component	Side	Substrate	Paint Color	Condition	Result (mg/cm ²)	Precision (+/-)	Pass/Fail Standard
8-Nov-22	58	Fourth	West Stairwell	Stair Riser	N/A	Concrete	Blue	Intact	0.18	0.03	Negative
8-Nov-22	59	Fourth	West Stairwell	Stair Stringer	N/A	Concrete	Blue	Intact	0.03	0.00	Negative
8-Nov-22	60	Third	Room 207	Door	N	Wood	Beige	Intact	0.00	0.00	Negative
8-Nov-22	61	Third	Room 207	Door Frame	N	Metal	Brown	Intact	0.11	0.02	Negative
8-Nov-22	62	Third	Room 207	Wall	N	Plaster	Cream	Intact	0.00	0.00	Negative
8-Nov-22	63	Third	Room 207	Wall	E	Plaster	Cream	Intact	0.00	0.00	Negative
8-Nov-22	64	Third	Room 207	Wall	S	Plaster	Cream	Intact	0.05	0.01	Negative
8-Nov-22	65	Third	Room 207	Wall	W	Drywall	Light Blue	Intact	0.00	0.00	Negative
8-Nov-22	66	Third	Room 207	Window Frame	S	Wood	Cream	Intact	0.00	0.00	Negative
8-Nov-22	67	Third	Room 207	Window Sill	S	Wood	Cream	Intact	0.01	0.00	Negative
8-Nov-22	68	Third	Room 207	Unit Ventilator Cover	S	Metal	Cream	Intact	0.00	0.00	Negative
8-Nov-22	69	Third	3rd Floor Hallway	Wall	N	Plaster	Cream	Intact	0.00	0.00	Negative
8-Nov-22	70	Third	3rd Floor Hallway	Wall	E	Block	Cream	Intact	0.38	0.07	Negative
8-Nov-22	71	Third	3rd Floor Hallway	Wall	S	Plaster	Cream	Intact	0.01	0.00	Negative
8-Nov-22	72	Third	3rd Floor Hallway	Wall	W	Block	Cream	Intact	0.00	0.00	Negative
8-Nov-22	73	Third	3rd Floor Hallway	Lockers	N	Metal	Beige	Intact	0.00	0.00	Negative
8-Nov-22	74	Third	3rd Floor Hallway	Lockers	S	Metal	Gray	Intact	0.11	0.02	Negative
8-Nov-22	75	Third	3rd Floor Hallway	Floor	N/A	Concrete	Blue	Intact	0.00	0.00	Negative
8-Nov-22	76	Third	3rd Floor Women's Faculty Bathroom	Wall	N	Ceramic Tile	Beige	Intact	2.19	0.13	Positive
8-Nov-22	77	Third	3rd Floor Women's Faculty Bathroom	Wall	E	Ceramic Tile	Beige	Intact	2.41	0.12	Positive
8-Nov-22	78	Third	3rd Floor Women's Faculty Bathroom	Wall	S	Ceramic Tile	Beige	Intact	2.41	0.13	Positive
8-Nov-22	79	Third	3rd Floor Women's Faculty Bathroom	Wall	W	Ceramic Tile	Beige	Intact	2.09	0.13	Positive
8-Nov-22	80	Third	3rd Floor Women's Faculty Bathroom	Floor	N/A	Ceramic Tile	White	Intact	0.00	0.00	Negative
8-Nov-22	81	Third	3rd Floor Women's Faculty Bathroom	Stall	N/A	Wood	Red	Intact	0.00	0.00	Negative
8-Nov-22	82	Third	3rd Floor Women's Faculty Bathroom	Door	S	Wood	Red	Intact	0.00	0.00	Negative
8-Nov-22	83	Third	3rd Floor Women's Faculty Bathroom	Door Frame	S	Metal	Brown	Intact	0.04	0.00	Negative
8-Nov-22	84	Third	Room 205	Door	N	Wood	Beige	Intact	0.00	0.00	Negative
8-Nov-22	85	Third	Room 205	Door Frame	N	Metal	Brown	Intact	0.06	0.02	Negative
8-Nov-22	86	Third	Room 205	Wall	N	Plaster	Cream	Intact	0.00	0.00	Negative
8-Nov-22	87	Third	Room 205	Wall	E	Drywall	Cream	Intact	0.00	0.00	Negative
8-Nov-22	88	Third	Room 205	Wall	S	Drywall	Cream	Intact	0.00	0.00	Negative
8-Nov-22	89	Third	Room 205	Wall	W	Plaster	Cream	Intact	0.00	0.00	Negative
8-Nov-22	90	Third	Room 205	Window Frame	S	Wood	Cream	Intact	0.05	0.00	Negative
8-Nov-22	91	Third	Room 205	Window Sill	S	Wood	Cream	Intact	0.00	0.00	Negative
8-Nov-22	92	Third	Room 205	Unit Ventilator Cover	S	Metal	Cream	Intact	0.00	0.00	Negative
8-Nov-22	93	Third	3rd Floor Hallway	Elevator Door	N	Metal	Brown	Intact	0.00	0.00	Negative
8-Nov-22	94	Third	3rd Floor Hallway	Elevator Door Frame	N	Metal	Brown	Intact	0.00	0.00	Negative
8-Nov-22	95	Third	Room 201	Door	N	Wood	Beige	Intact	0.00	0.00	Negative
8-Nov-22	96	Third	Room 201	Door Frame	N	Metal	Brown	Intact	0.11	0.02	Negative
8-Nov-22	97	Third	Room 201	Wall	N	Plaster	Cream	Intact	0.00	0.00	Negative
8-Nov-22	98	Third	Room 201	Wall	E	Drywall	Cream	Intact	0.00	0.00	Negative
8-Nov-22	99	Third	Room 201	Wall	S	Plaster	Light Green	Intact	0.00	0.00	Negative
8-Nov-22	100	Third	Room 201	Wall	W	Drywall	Cream	Intact	0.00	0.00	Negative
8-Nov-22	101	Third	Room 201	Window Frame	E	Wood	Cream	Intact	0.04	0.00	Negative
8-Nov-22	102	Third	Room 201	Window Sill	E	Wood	Cream	Intact	0.00	0.00	Negative
8-Nov-22	103	Second	Room 105	Door	N	Wood	Beige	Intact	0.00	0.00	Negative
8-Nov-22	104	Second	Room 105	Door Frame	N	Metal	Brown	Intact	0.11	0.02	Negative
8-Nov-22	105	Second	Room 105	Wall	N	Plaster	White	Intact	0.00	0.00	Negative
8-Nov-22	106	Second	Room 105	Wall	E	Plaster	White	Intact	0.00	0.00	Negative
8-Nov-22	107	Second	Room 105	Wall	S	Plaster	Orange	Intact	0.00	0.00	Negative
8-Nov-22	108	Second	Room 105	Wall	W	Drywall	White	Intact	0.00	0.00	Negative
8-Nov-22	109	Second	Room 105	Window Frame	S	Wood	White	Intact	0.00	0.00	Negative
8-Nov-22	110	Second	Room 105	Window Sill	S	Wood	White	Intact	0.01	0.00	Negative

LOD = Limit of Detection

EPA/HUD definition of lead-based paint (LBP) = >1.0 mg/cm² (Line Items BOLD)

E2S Project 1450.0001

11/9/2022

Table 3 - XRF Lead Testing Results - Chester Upland School of the Arts

Date	Test #	Floor	Location	Component	Side	Substrate	Paint Color	Condition	Result (mg/cm ²)	Precision (+/-)	Pass/Fail Standard
8-Nov-22	111	Second	Room 105	Window Sash	S	Wood	Brown	Intact	0.00	0.00	Negative
8-Nov-22	112	Second	2nd Floor Hallway	Wall	N	Plaster	White/Blue	Intact	0.00	0.00	Negative
8-Nov-22	113	Second	2nd Floor Hallway	Wall	E	Block	White/Blue	Intact	0.19	0.02	Negative
8-Nov-22	114	Second	2nd Floor Hallway	Wall	S	Plaster	White/Blue	Intact	0.00	0.00	Negative
8-Nov-22	115	Second	2nd Floor Hallway	Wall	W	Block	White/Blue	Intact	0.01	0.00	Negative
8-Nov-22	116	Second	2nd Floor Hallway	Lockers	S	Metal	Red	Intact	0.00	0.00	Negative
8-Nov-22	117	Second	2nd Floor Hallway	Floor	N/A	Concrete	Blue	Intact	0.00	0.00	Negative
8-Nov-22	118	Second	Room 107	Door	N	Wood	Beige	Intact	0.00	0.00	Negative
8-Nov-22	119	Second	Room 107	Door Frame	N	Metal	Brown	Intact	0.02	0.00	Negative
8-Nov-22	120	Second	Room 107	Wall	N	Plaster	White	Intact	0.00	0.00	Negative
8-Nov-22	121	Second	Room 107	Wall	E	Drywall	White	Intact	0.00	0.00	Negative
8-Nov-22	122	Second	Room 107	Wall	S	Drywall	White	Intact	0.00	0.00	Negative
8-Nov-22	123	Second	Room 107	Wall	W	Drywall	White	Intact	0.00	0.00	Negative
8-Nov-22	124	Second	Room 107	Window Frame	S	Wood	White	Intact	0.13	0.04	Negative
8-Nov-22	125	Second	Room 107	Window Sill	S	Wood	White	Intact	0.00	0.00	Negative
8-Nov-22	126	Second	Room 107	Unit Ventilator Cover	S	Metal	Cream	Intact	0.00	0.00	Negative
8-Nov-22	127	Second	2nd Floor Boy's Bathroom	Wall	N	Ceramic Tile	Beige	Intact	2.11	0.12	Positive
8-Nov-22	128	Second	2nd Floor Boy's Bathroom	Wall	E	Ceramic Tile	Beige	Intact	2.16	0.16	Positive
8-Nov-22	129	Second	2nd Floor Boy's Bathroom	Wall	S	Ceramic Tile	Beige	Intact	2.26	0.14	Positive
8-Nov-22	130	Second	2nd Floor Boy's Bathroom	Wall	W	Ceramic Tile	Beige	Intact	2.35	0.14	Positive
8-Nov-22	131	Second	2nd Floor Boy's Bathroom	Floor	N/A	Ceramic Tile	Olive	Intact	0.00	0.00	Negative
8-Nov-22	132	Second	2nd Floor Boy's Bathroom	Door	S	Wood	Blue	Intact	0.00	0.00	Negative
8-Nov-22	133	Second	2nd Floor Boy's Bathroom	Door Frame	S	Metal	Brown	Intact	0.08	0.02	Negative
8-Nov-22	134	Second	2nd Floor Boy's Bathroom	Stall	N/A	Wood	Blue	Intact	0.07	0.00	Negative
8-Nov-22	135	Second	2nd Floor Hallway	Old Wall Cove Trim	W	Wood	White	Intact	1.53	0.11	Positive
8-Nov-22	136	Second	2nd Floor Hallway	Old Wall Cove Trim	E	Wood	White	Intact	1.28	0.10	Positive
8-Nov-22	137	Second	Room 120	Wall	N	Block	White	Intact	0.00	0.00	Negative
8-Nov-22	138	Second	Room 120	Wall	E	Block	White	Intact	0.00	0.00	Negative
8-Nov-22	139	Second	Room 120	Wall	S	Block	White	Intact	0.00	0.00	Negative
8-Nov-22	140	Second	Room 120	Wall	W	Block	White	Intact	0.00	0.00	Negative
8-Nov-22	141	Second	Room 120	Door	W	Wood	Stained	Intact	0.01	0.00	Negative
8-Nov-22	142	Second	Room 120	Door Frame	W	Metal	Brown	Intact	0.03	0.00	Negative
8-Nov-22	143	Second	Main Office	Wall	N	Block	White	Intact	0.00	0.00	Negative
8-Nov-22	144	Second	Main Office	Wall	E	Block	White	Intact	0.00	0.00	Negative
8-Nov-22	145	Second	Main Office	Wall	W	Block	White	Intact	0.01	0.00	Negative
8-Nov-22	146	Second	Main Office	Divider Wall	N/A	Metal	Tan	Intact	0.00	0.00	Negative
8-Nov-22	147	Second	Stairwell 5	Steel Beam	N/A	Metal	White	Intact	0.01	0.00	Negative
8-Nov-22	148	Second	Stairwell 5	Stair Tread	N/A	Metal	Red	Intact	0.01	0.00	Negative
8-Nov-22	149	Second	Stairwell 5	Stair Riser	N/A	Metal	Red	Intact	0.04	0.01	Negative
8-Nov-22	150	Second	Stairwell 5	Stair Stringer	N/A	Metal	Red	Intact	0.04	0.00	Negative
8-Nov-22	151	Second	Stairwell 5	Window Frame	W	Wood	Brown	Intact	0.00	0.00	Negative
8-Nov-22	152	Second	Stairwell 5	Structural Steel	N/A	Metal	Orange Red	Intact	0.01	0.00	Negative
8-Nov-22	153	Second	Stairwell 5	Ceiling Joist	N/A	Metal	Brown	Intact	0.00	0.00	Negative
8-Nov-22	154	First	Room 026	Door Frame	E	Metal	Brown	Intact	0.06	0.01	Negative
8-Nov-22	155	First	1st Floor Hallway	Wall	W	Dryvit	Tan	Intact	0.00	0.00	Negative
8-Nov-22	156	First	1st Floor Hallway	Floor	N/A	Concrete	Gray	Intact	0.00	0.00	Negative
8-Nov-22	157	First	1st Floor Hallway	Wall	E	Block	Tan	Intact	0.00	0.00	Negative
8-Nov-22	158	First	1st Floor Hallway	Door	S	Metal	Gray	Intact	0.10	0.02	Negative
8-Nov-22	159	First	1st Floor Hallway	Door Frame	S	Metal	Gray	Intact	0.04	0.00	Negative
8-Nov-22	160	First	1st Floor Hallway	Stair Handrail	N/A	Metal	Gray	Intact	0.10	0.03	Negative
8-Nov-22	161	First	1st Floor Hallway	Stair Landing	N/A	Concrete	Gray	Intact	0.00	0.00	Negative
8-Nov-22	162	First	Room 014 Boiler Room	Wall	E	Brick	Whitewash	Intact	0.00	0.00	Negative
8-Nov-22	163	First	Room 017 Air Handler Room	Door	W	Metal	Gray	Intact	0.05	0.00	Negative

LOD = Limit of Detection

EPA/HUD definition of lead-based paint (LBP) = >1.0 mg/cm² (Line Items BOLD)

E2S Project 1450.0001

11/9/2022

Table 3 - XRF Lead Testing Results - Chester Upland School of the Arts

Date	Test #	Floor	Location	Component	Side	Substrate	Paint Color	Condition	Result (mg/cm ²)	Precision (+/-)	Pass Fail Standard
8-Nov-22	164	First	Room 017 Air Handler Room	Door Frame	W	Metal	Gray	Intact	0.08	0.02	Negative
8-Nov-22	165	First	Stairwell 5	Door	E	Metal	Gray	Intact	0.02	0.00	Negative
8-Nov-22	166	First	Stairwell 5	Door Frame	E	Metal	Gray	Intact	0.04	0.01	Negative
8-Nov-22	167	Third	Room 207	Ceiling	N/A	Plaster	Cream	Intact	0.08	0.00	Negative
8-Nov-22	168	Second	Room 112	Door	S	Wood	Beige	Intact	0.00	0.00	Negative
8-Nov-22	169	Second	Room 112	Door Frame	S	Metal	Brown	Intact	0.03	0.00	Negative
8-Nov-22	170	Second	Room 112	Wall	S	Plaster	Lavender	Intact	0.00	0.00	Negative
8-Nov-22	172	Second	Room 112	Wall	N	Drywall	Pink	Intact	0.00	0.00	Negative
8-Nov-22	173	Second	Room 112	Wall	E	Plaster	Lavender	Intact	0.00	0.00	Negative
8-Nov-22	174	Second	Room 112	Window Frame	N	Wood	White	Intact	0.00	0.00	Negative
8-Nov-22	175	Second	Room 112	Window Sill	N	Wood	White	Intact	0.00	0.00	Negative
8-Nov-22	176	Second	Room 112	Unit Ventilator Cover	N	Metal	Cream	Intact	0.00	0.00	Negative
8-Nov-22	177	Second	2nd Floor Hallway	Ceiling Trim	N	Plaster	Cream	Intact	0.04	0.00	Negative
8-Nov-22	178	First	Cafeteria	Wall	N	Drywall	Yellow/Orange	Intact	0.00	0.00	Negative
8-Nov-22	179	First	Cafeteria	Wall	E	Drywall	Yellow/Orange	Intact	0.00	0.00	Negative
8-Nov-22	180	First	Cafeteria	Wall	S	Drywall	Yellow/Orange	Intact	0.00	0.00	Negative
8-Nov-22	181	First	Cafeteria	Wall	W	Drywall	Yellow/Orange	Intact	0.00	0.00	Negative
8-Nov-22	182	First	Cafeteria	Window Frame	S	Wood	White	Intact	0.03	0.00	Negative
8-Nov-22	183	First	Cafeteria	Window Sill	S	Wood	White	Intact	0.00	0.00	Negative
8-Nov-22	184	First	Cafeteria	Door	E	Metal	Brown	Intact	0.00	0.00	Negative
8-Nov-22	185	First	Cafeteria	Door Frame	E	Metal	Brown	Intact	0.00	0.00	Negative
8-Nov-22	186	First	1st Floor Hallway	Wall	N	Block	White	Intact	0.00	0.00	Negative
8-Nov-22	187	First	1st Floor Hallway	Wall	E	Block	White	Intact	0.01	0.00	Negative
8-Nov-22	188	First	1st Floor Hallway	Wall	S	Plaster	White	Intact	0.00	0.00	Negative
8-Nov-22	189	First	1st Floor Hallway	Wall	W	Block	White	Intact	0.00	0.00	Negative
8-Nov-22	190	First	Music Room	Wall	N	Plaster	Tan	Intact	0.00	0.00	Negative
8-Nov-22	191	First	Music Room	Wall	E	Plaster	Tan	Intact	0.00	0.00	Negative
8-Nov-22	192	First	Music Room	Wall	S	Plaster	Tan	Intact	0.02	0.00	Negative
8-Nov-22	193	First	Music Room	Wall	W	Drywall	Tan	Intact	0.00	0.00	Negative
8-Nov-22	194	First	Music Room	Window Frame	S	Wood	White	Intact	0.02	0.00	Negative
8-Nov-22	195	First	Music Room	Window Sill	S	Wood	White	Intact	0.00	0.00	Negative
8-Nov-22	196	First	Music Room	Unit Ventilator Cover	S	Metal	Cream	Intact	0.00	0.00	Negative
8-Nov-22	198	First	First Floor Girl's Bathroom	Wall	W	Ceramic Tile	White	Intact	2.07	0.10	Positive
8-Nov-22	199	First	First Floor Girl's Bathroom	Wall	S	Ceramic Tile	White	Intact	2.51	0.12	Positive
8-Nov-22	200	First	First Floor Girl's Bathroom	Stall	N/A	Metal	Orange	Intact	0.12	0.00	Negative

LOD = Limit of Detection

EPA/HUD definition of lead-based paint (LBP) = >1.0 mg/cm² (Line Items BOLD)

E2S Project 1450.0001

11/9/2022

Table 4 - PCB in Caulk Sample Analytical Results - Chester Upland School of the Arts

Sample Number	Location	Material Description	PCB Concentration	PCB Compound Present*
CUSA-11/8-01PCB	Exterior	Exterior Caulk (Composite)	1.4 mg/kg (ppm)	Aroclor-1254
CUSA-11/8-01PCB	Exterior	Exterior Caulk (Composite)	0.41 mg/kg (ppm)	Aroclor-1260

* All samples were analyzed for the nine (9) most common PCB forms: Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260, Aroclor-1262 and Aroclor-1268. PCB's were detected in the sample for Aroclor-1254 and Aroclor-1260, but at levels well below 50 mg/kg (parts per million), the EPA threshold level for PCB-containing bulk product waste for caulk.

Appendix A

Laboratory Analytical Reports – EMSL Analytical, Inc.

Asbestos Bulk - Polarized Light Microscopy (PLM)

**Lead Paint Chip – Flame Atomic Absorption
Spectroscopy (Flame AAS)**

Bulk PCB in Caulk – Method SW 846-8082A



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

Tel/Fax: (800) 220-3675 / (856) 786-5974

<http://www.EMSL.com> / cinnasblab@EMSL.com

EMSL Order: 042228320

Customer ID: ELES42

Customer PO: 1450.0001

Project ID:

Attention: David Bertsch
Element Environmental Solutions, Inc.
61 Willow Street
PO Box 921
Adamstown, PA 19501

Phone: (717) 484-5111

Fax:

Received Date: 11/10/2022 9:20 AM

Analysis Date: 11/18/2022 - 11/19/2022

Collected Date: 11/08/2022

Project: Chester Upland SD - School of the Arts

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
CUSA-11/8-01BK <small>042228320-0001</small>	4th Floor Hallway - Mastic End on FGIP	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
CUSA-11/8-02BK-Floor Tile <small>042228320-0002</small>	Room 311 Storage - Black 1x1 Floor Tile	Brown/Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
CUSA-11/8-02BK-Masti c <small>042228320-0002A</small>	Room 311 Storage - Mastic	Black Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	None Detected
CUSA-11/8-03BK-Plast er <small>042228320-0003</small>	4th Floor Hallway - Ceiling Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
CUSA-11/8-03BK-Skim Coat <small>042228320-0003A</small>	4th Floor Hallway - Ceiling Skim Coat	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
CUSA-11/8-03BK-Textu re <small>042228320-0003B</small>	4th Floor Hallway - Ceiling Texture	Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
CUSA-11/8-04BK <small>042228320-0004</small>	4th Floor Hallway - Debris on Ceiling Tile	Brown/Various Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
CUSA-11/8-05BK <small>042228320-0005</small>	4th Floor Hallway - 2x4 Ceiling Tile (Dot Faced)	Gray/White Fibrous Homogeneous	40% Cellulose 40% Min. Wool	20% Non-fibrous (Other)	None Detected
CUSA-11/8-06BK-Concr ete Floor <small>042228320-0006</small>	4th Floor Hallway - Painted Concrete Floor	Gray/Tan/Red Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
CUSA-11/8-06BK-Level er <small>042228320-0006A</small>	4th Floor Hallway - Leveler	Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
CUSA-11/8-07BK <small>042228320-0007</small>	Room 304 - Black Mastic U.C	Gray/Black/Yellow Non-Fibrous Heterogeneous		97% Non-fibrous (Other)	3% Chrysotile
CUSA-11/8-08BK <small>042228320-0008</small>	3rd Floor Women's Faculty - Foil Wrap on F.G. Pipe Insulation	Tan/Black/Silver Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
CUSA-11/8-09BK <small>042228320-0009</small>	3rd Floor Women's Faculty - Mud Fitting on FGIP	Gray Fibrous Homogeneous	35% Min. Wool	60% Non-fibrous (Other)	5% Chrysotile
CUSA-11/8-10BK <small>042228320-0010</small>	Room 205 - Carpet Mastic (Yellow)	White/Yellow Non-Fibrous Heterogeneous		100% Non-fibrous (Other)	None Detected

Result includes a small amount of inseparable attached material

Initial report from: 11/19/2022 14:24:59



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

Tel/Fax: (800) 220-3675 / (856) 786-5974

<http://www.EMSL.com> / cinnasblab@EMSL.com

EMSL Order: 042228320

Customer ID: ELES42

Customer PO: 1450.0001

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
CUSA-11/8-11BK 042228320-0011	3rd Floor Stair at Room 210 - Spline Ceiling Tile	Gray/Tan Fibrous Homogeneous	80% Min. Wool	20% Non-fibrous (Other)	None Detected
CUSA-11/8-12BK 042228320-0012	2nd Floor Hallway - Fire Stop Sealant	Red Fibrous Homogeneous	5% Synthetic	95% Non-fibrous (Other)	None Detected
CUSA-11/8-13BK-Floor Tile 042228320-0013	Stair #4 - Gray 9x9 Floor Tile	Gray Fibrous Homogeneous		94% Non-fibrous (Other)	6% Chrysotile
CUSA-11/8-13BK-Mastic 042228320-0013A	Stair #4 - Mastic	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
CUSA-11/8-14BK-Floor Tile 042228320-0014	Room 009 - Beige with Streaks 1x1	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
CUSA-11/8-14BK-Mastic 042228320-0014A	Room 009 - Mastic	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
CUSA-11/8-15BK 042228320-0015	Room 009 - Filler/Epoxy	Gray/Various/Black Non-Fibrous Heterogeneous		100% Non-fibrous (Other)	<1% Chrysotile
CUSA-11/8-16BK-Concrete 042228320-0016	Stair #1 - Painted Concrete	Tan/Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
CUSA-11/8-16BK-Epoxy 042228320-0016A	Stair #1 - Epoxy	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
CUSA-11/8-17BK-Concrete 042228320-0017	Room 001 - Painted Concrete	Brown/Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
CUSA-11/8-17BK-Epoxy 042228320-0017A	Room 001 - Epoxy U.C	Yellow/Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
CUSA-11/8-18BK 042228320-0018	Boiler Room - Boiler Gasket (Smith Old)	Tan Fibrous Homogeneous	40% Synthetic 45% Min. Wool	15% Non-fibrous (Other)	None Detected
CUSA-11/8-19BK 042228320-0019	Boiler Room - Boiler Gasket (Smith Newer)	White Fibrous Homogeneous	45% Synthetic 50% Glass	5% Non-fibrous (Other)	None Detected
CUSA-11/8-20BK 042228320-0020	Room 005 - Mastic End on FGIP	White/Yellow Fibrous Homogeneous	10% Cellulose 20% Glass	70% Non-fibrous (Other)	None Detected
CUSA-11/8-21BK-Ceiling Tile 042228320-0021	Multipurpose Room - Spline Ceiling Tile	Gray/White Fibrous Homogeneous	70% Min. Wool	30% Non-fibrous (Other)	None Detected
CUSA-11/8-21BK-Adhesive 042228320-0021A	Multipurpose Room - Adhesive	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 11/19/2022 14:24:59



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

Tel/Fax: (800) 220-3675 / (856) 786-5974

<http://www.EMSL.com/cinnasblab@EMSL.com>

EMSL Order: 042228320

Customer ID: ELES42

Customer PO: 1450.0001

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
CUSA-11/8-22BK-Floor Tile	Multipurpose Room - Yellow/Orange 1x1 Floor Tile	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0022					
CUSA-11/8-22BK-Mastic	Multipurpose Room - Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0022A					
CUSA-11/8-22BK-Floor Tile 2	Multipurpose Room - Floor Tile	Orange Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0022B					
CUSA-11/8-22BK-Mastic 2	Multipurpose Room - Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0022C					
CUSA-11/8-23BK	1st Floor Hallway - Layered Paper Pipe Insulation	Brown Fibrous Homogeneous	97% Cellulose	3% Non-fibrous (Other)	None Detected
042228320-0023					
CUSA-11/8-24BK-Floor Tile	Room 307 - Beige 1x1 Floor Tile	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0024					
CUSA-11/8-24BK-Mastic	Room 307 - Mastic	Black Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
042228320-0024A					
CUSA-11/8-25BK	Room 311 - Science Countertop	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0025					
CUSA-11/8-26BK-Plaster	Custodial Closet 306 - Wall Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0026					
CUSA-11/8-26BK-Skim Coat	Custodial Closet 306 - Wall Skim Coat	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0026A					
CUSA-11/8-26BK-Texture	Custodial Closet 306 - Wall Texture	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0026B					
CUSA-11/8-27BK-Floor Tile	Room 314A - Blue/Gray 1x1 Floor Tile	Gray/Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0027					
CUSA-11/8-27BK-Mastic	Room 314A - Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0027A					
CUSA-11/8-28BK	Room 314A - Cove Base Mastic	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0028					
CUSA-11/8-29BK-Floor Tile	Room 309 - Gray with Streaks 1x1 Floor Tile	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0029					

Initial report from: 11/19/2022 14:24:59



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

Tel/Fax: (800) 220-3675 / (856) 786-5974

<http://www.EMSL.com> / cinnasblab@EMSL.com

EMSL Order: 042228320

Customer ID: ELES42

Customer PO: 1450.0001

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
CUSA-11/8-29BK-Mastic	Room 309 - Mastic	Black/Clear Non-Fibrous Heterogeneous		100% Non-fibrous (Other)	<1% Chrysotile
042228320-0029A					
CUSA-11/8-30BK-Floor Tile	Room 208 - White with Streaks 1x1 Floor Tile	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0030					
CUSA-11/8-30BK-Mastic	Room 208 - Mastic	Black Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
042228320-0030A					
CUSA-11/8-31BK	2nd Floor Boy's Restroom - Ceramic Tile Adhesive	White/Yellow/Green Non-Fibrous Heterogeneous		100% Non-fibrous (Other)	None Detected
042228320-0031					
Result includes a small amount of inseparable attached material					
CUSA-11/8-32BK-Drywall	Room 112 - Drywall	Brown/White Fibrous Homogeneous	15% Cellulose 5% Glass	80% Non-fibrous (Other)	None Detected
042228320-0032					
CUSA-11/8-32BK-Joint Compound	Room 112 - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0032A					
CUSA-11/8-33BK-Floor Tile	Room 312 - White with Black Streaks 1x1 Floor Tile	White/Black Non-Fibrous Homogeneous		96% Non-fibrous (Other)	4% Chrysotile
042228320-0033					
CUSA-11/8-33BK-Mastic	Room 312 - Mastic	Black Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
042228320-0033A					
CUSA-11/8-34BK-Floor Tile	Room 202 - Gray 1x1 Floor Tile	Gray Non-Fibrous Homogeneous		96% Non-fibrous (Other)	4% Chrysotile
042228320-0034					
CUSA-11/8-34BK-Mastic	Room 202 - Mastic	Black Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
042228320-0034A					
CUSA-11/8-35BK-Floor Tile	Room 127 - Green 9x9 Floor Tile	Green Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
042228320-0035					
CUSA-11/8-35BK-Mastic	Room 127 - Mastic	Black/Yellow Non-Fibrous Heterogeneous		100% Non-fibrous (Other)	None Detected
042228320-0035A					
CUSA-11/8-35BK-Mastic 2	Room 127 - Mastic	Gray/Yellow Non-Fibrous Heterogeneous		100% Non-fibrous (Other)	None Detected
042228320-0035B					
Result includes a small amount of inseparable attached material					
CUSA-11/8-36BK-Plaster	Room 112 - Wall Plaster	Gray Fibrous Homogeneous	5% Hair	95% Non-fibrous (Other)	None Detected
042228320-0036					

Initial report from: 11/19/2022 14:24:59



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

Tel/Fax: (800) 220-3675 / (856) 786-5974

<http://www.EMSL.com> / cinnasblab@EMSL.com

EMSL Order: 042228320

Customer ID: ELES42

Customer PO: 1450.0001

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
CUSA-11/8-36BK-Skim Coat	Room 112 - Wall Skim Coat	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0036A					
CUSA-11/8-36BK-Mastic	Room 112 - Mastic	Brown/Yellow Non-Fibrous Heterogeneous		100% Non-fibrous (Other)	None Detected
042228320-0036B Inseparable paint / coating layer included in analysis					
CUSA-11/8-37BK	3rd Floor Hallway - Cove Base (Slate)	Various/Black/Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0037 Inseparable paint / coating layer included in analysis					
CUSA-11/8-38BK	Exterior - Window Caulk	Brown/Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0038					
CUSA-11/8-39BK	Exterior - Door Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0039					
CUSA-11/8-40BK	Exterior - Soffit Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0040					
CUSA-11/8-41BK	Exterior - Window Trim Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0041					
CUSA-11/8-42BK	Exterior - Rough Plaster Soffit	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042228320-0042					

Analyst(s)

Alex Francois (24)

Michelle Quach (43)

Samantha Rundstrom, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA LAP, LLC-IHLAP Lab 100194, NJ DEP 03036, PA ID# 68-00367, LA #04127

Initial report from: 11/19/2022 14:24:59

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

042228320

Cinnaminson, NJ 08077
PHONE: 1-800-220-3675
FAX: (856) 786-5974

Company: Element Environmental Solutions		EMSL-Bill to: <input checked="" type="checkbox"/> Same <input type="checkbox"/> Different If Bill to is Different note instructions in Comments**	
Street: 61 Willow Street PO Box 921		Third Party Billing requires written authorization from third party	
City: Adamstown	State/Province: PA	Zip/Postal Code: 19501	Country: United States
Report To (Name): David Bertsch		Telephone #: 717-484-5111	
Email Address: <u>IAQ@e2s.us</u>		Fax #:	Purchase Order: <u>1450.0001</u>
Project Name/Number: <u>Chester Upland SD - School of the Arts</u>		Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email <input type="checkbox"/> Mail	
U.S. State Samples Taken: PA		CT Samples: <input type="checkbox"/> Commercial/Taxable <input type="checkbox"/> Residential/Tax Exempt	
Turnaround Time (TAT) Options* - Please Check			
<input type="checkbox"/> 3 Hour	<input type="checkbox"/> 6 Hour	<input type="checkbox"/> 24 Hour	<input checked="" type="checkbox"/> 48 Hour
<input type="checkbox"/> 72 Hour	<input type="checkbox"/> 96 Hour	<input type="checkbox"/> 1 Week	<input type="checkbox"/> 2 Week
*For TEM Air 3 hr through 6 hr, please call ahead to schedule. There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.			
PLM - Bulk (reporting limit)		TEM - Bulk	
<input checked="" type="checkbox"/> PLM EPA 600/R-93/116 (<1%)		<input type="checkbox"/> TEM EPA NOB - EPA 600/R-93/116 Section 2.5.1	
<input type="checkbox"/> PLM EPA NOB (<1%)		<input type="checkbox"/> NY ELAP Method 198.4 (TEM)	
Point Count <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%)		<input type="checkbox"/> Chatfield Protocol (semi-quantitative)	
Point Count w/Gravimetric <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%)		<input type="checkbox"/> TEM % by Mass - EPA 600/R-93/116 Section 2.5.2	
<input type="checkbox"/> NIOSH 9002 (<1%)		<input type="checkbox"/> TEM Qualitative via Filtration Prep Technique	
<input type="checkbox"/> NY ELAP Method 198.1 (friable in NY)		<input type="checkbox"/> TEM Qualitative via Drop Mount Prep Technique	
<input type="checkbox"/> NY ELAP Method 198.6 NOB (non-friable-NY)		Other	
<input type="checkbox"/> OSHA ID-191 Modified		<input type="checkbox"/>	
<input type="checkbox"/> Standard Addition Method			
<input type="checkbox"/> Check For Positive Stop - Clearly Identify Homogenous Group		Date Sampled: <u>11/8/2022</u>	
Samplers Name: <u>Michael Seifert</u>		Samplers Signature: <u>Michael Seifert</u>	
Sample #	Sample Location	Material Description	
CUSA-11/8-01 BK	4 th Floor Hallway	Mastic End on FGIP	
- 02 BK	Room 311 Storage	Black 1x1 FT/IM	
- 03 BK	4 th Floor Hallway	Ceiling Plaster	
- 04 BK		Debris on Ceiling Tile	
- 05 BK		2x4 Ceiling Tile (Dot Faced)	
- 06 BK		Painted Concrete Floor	
- 07 BK	Room 304	Black Mastic U.C.	
- 08 BK	3 rd Floor Women's Faculty	Foil wrap on F.G. Pipe Insulation	
- 09 BK	3 rd Floor Women's Faculty	Mud Fitting on FGIP	
- 10 BK	Room 205	Carpet Mastic (yellow)	
Client Sample # (s):		Total # of Samples: <u>420</u>	
Relinquished (Client): <u>Michael Seifert</u>		Date: <u>11/9/2022</u>	Time:
Received (Lab): <u>OMB-LX</u>		Date: <u>11-10-22</u>	Time: <u>920A</u>
Comments/Special Instructions:			

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

042228320

Cinnaminson, NJ 08077

PHONE: 1-800-220-3675

FAX: (856) 786-5974

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	EMSL	Sample Location	Material Description
CUSA-11/8	11 BK	3 rd Floor Stair at Room 210	Spline Ceiling Tile
-	12 BK	2nd Floor Hallway	Fire Stop Sealant
-	13 BK	Stair #4	Gray 9x9 FT/m
-	14 BK	Room 009	Beige with streaks 1x1 FT/m
-	15 BK	Room 009	Filler/Epoxy
-	16 BK	Stair #1	Painted Concrete/Epoxy
-	17 BK	Room 001	Painted Concrete/Epoxy U.C.
-	18 BK	Boiler Room	Boiler Gasket (Smith old)
-	19 BK	Boiler Room	Boiler Gasket (Smith Newer)
-	20 BK	Room 005	Mastic End on FGIP
-	21 BK	Multi Purpose Room	Spline Ceiling Tile + Adhesive
-	22 BK	Multi Purpose Room	yellow/orange 1x1 FT/m
-	23 BK	1 st Floor Hallway	Layered Paper Pipe Insulation
-	24 BK	Room 307	Beige 1x1 FT/m
-	25 BK	Room 311	Science Countertop
-	26 BK	custodial closet 306	Wall Plaster
-	27 BK	Room 314 A	Blue/Gray 1x1 FT/m
-	28 BK	Room 314 A	Cove Base Mastic
-	29 BK	Room 309	Gray with streaks 1x1 FT/m
-	30 BK	Room 208	white with streaks 1x1 FT/m
-	31 BK	2nd Floor Boy's Restroom	Ceramic Tile Adhesive
-	32 BK	Room 112	Drywall / Joint Compound
-	33 BK	Room 312	White with Black streaks 1x1 FT/m
V-V	34 BK	Room 202	Gray 1x1 FT/m
*Comments/Special Instructions:			

RECEIVED
EMSL
CINNAMINSON, N.J.
2017 NOV 10 AM 10:59



EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (*Lab Use Only*):

04/2228320

Cinnaminson, NJ 08077

PHONE: 1-800-220-3675

FAX: (856) 786-5974

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

[illegible]

**EMSL Analytical, Inc.**

200 Route 130 North, Cinnaminson, NJ 08077

Phone/Fax: (856) 303-2500 / (856) 786-5974

<http://www.EMSL.com>cinnaminsonleadlab@emsl.com

EMSL Order: 202209747

CustomerID: ELES42

CustomerPO: 1450.0001

ProjectID:

Attn: **Dave Bertsch**
Element Environmental Solutions, Inc.
61 Willow Street
PO Box 921
Adamstown, PA 19501

Phone: (717) 484-5111
Fax:
Received: 11/10/2022 11:00 AM
Collected: 11/8/2022

Project: **Chester Upland SD - School of the Arts****Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)***

<i>Client Sample Description</i>	<i>Lab ID</i>	<i>Collected</i>	<i>Analyzed</i>	<i>Weight</i>	<i>Lead Concentration</i>
CUSA - 11/8-01 PC	202209747-0001	11/8/2022	11/10/2022	0.1854 g	31 % wt
Site: Exterior Window Frame Paint - Gray/Green)					

Owen Mckenna, Lead Laboratory Director
or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted.

* Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008% wt based on the minimum sample weight per our SOP. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. Definitions of modifications are available upon request.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NELAP Certifications: NJ 03036, NY 10872, PA 68-00367, AIHA-LAP, LLC ELLAP 100194, A2LA 2845.01

Initial report from 11/11/2022 17:31:50

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Lead (Pb) Chain of Custody

EMSL Order ID (Lab Use Only):

202209747

Cinnaminson, NJ 08077

PHONE: 1-800-220-3675

FAX: (856) 786-5974

Company: Element Environmental Solutions, Inc.		EMSL-Bill to: <input type="checkbox"/> Different <input checked="" type="checkbox"/> Same If Bill to is Different note instructions in Comments**	
Street: 61 Willow Street P.O. Box 921		Third Party Billing requires written authorization from third party	
City: Adamstown	State/Province: PA	Zip/Postal Code: 19501	Country: United States
Report To (Name): Dave Bertsch		Telephone #: 717-484-5111	
Email Address: IAQ@e2s.us		Fax #:	Purchase Order: /450,000
Project Name/Number: Chester Upland SD - School of the Arts		Please Provide Results: <input type="checkbox"/> FAX <input checked="" type="checkbox"/> E-mail <input type="checkbox"/> Mail	
U.S. State Samples Taken: PA		CT Samples: <input type="checkbox"/> Commercial/Taxable <input type="checkbox"/> Residential/Tax Exempt	
Turnaround Time (TAT) Options* - Please Check			
<input type="checkbox"/> 3 Hour	<input type="checkbox"/> 6 Hour	<input type="checkbox"/> 24 Hour	<input checked="" type="checkbox"/> 48 Hour
<input type="checkbox"/> 72 Hour	<input type="checkbox"/> 96 Hour	<input type="checkbox"/> 1 Week	<input type="checkbox"/> 2 Week
*Analysis completed in accordance with EMSL's Terms and Conditions located in the Price Guide			
Matrix	Method	Instrument	Reporting Limit
Chips <input checked="" type="checkbox"/> % by wt. <input type="checkbox"/> mg/cm ² <input type="checkbox"/> ppm	SW846-7000B	Flame Atomic Absorption	0.01%
Air	NIOSH 7082	Flame Atomic Absorption	4 µg/filter
	NIOSH 7105	Graphite Furnace AA	0.03 µg/filter
	NIOSH 7300 modified	ICP-AES/ICP-MS	0.5 µg/filter
Wipe* <input type="checkbox"/> ASTM <input type="checkbox"/> non ASTM <input type="checkbox"/> *if no box is checked, non-ASTM Wipe is assumed	SW846-7000B	Flame Atomic Absorption	10 µg/wipe
	SW846-6010B or C	ICP-AES	1.0 µg/wipe
	SW846-7000B/7010	Graphite Furnace AA	0.075 µg/wipe
TCLP	SW846-1311/7000B/SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)
	SW846-1131/SW846-6010B or C	ICP-AES	0.1 mg/L (ppm)
Soil	SW846-7000B	Flame Atomic Absorption	40 mg/kg (ppm)
	SW846-7010	Graphite Furnace AA	0.3 mg/kg (ppm)
	SW846-6010B or C	ICP-AES	2 mg/kg (ppm)
Wastewater Unpreserved <input type="checkbox"/> Preserved with HNO ₃ pH < 2 <input type="checkbox"/>	SM3111B/SW846-7000B	Flame Atomic Absorption	0.4 mg/L (ppm)
	EPA 200.9	Graphite Furnace AA	0.003 mg/L (ppm)
	EPA 200.7	ICP-AES	0.020 mg/L (ppm)
Drinking Water Unpreserved <input type="checkbox"/> Preserved with HNO ₃ pH < 2 <input type="checkbox"/>	EPA 200.9	Graphite Furnace AA	0.003 mg/L (ppm)
	EPA 200.8	ICP-MS	0.001 mg/L (ppm)
TSP/SPM Filter	40 CFR Part 50	ICP-AES	12 µg/filter
	40 CFR Part 50	Graphite Furnace AA	3.6 µg/filter
Other:			
Name of Sampler: Michael Seifert		Signature of Sampler: [Signature]	
Sample #	Location / Component	Volume/Area	Date/Time Sampled
CUSA-11/8-01PC	Exterior Window	Frame Paint (Gray/Green)	11/8/2022
Client Sample #'s	-	Total # of Samples:	1
Relinquished (Client): [Signature]	Date: 11/9/2022	Time:	
Received (Lab): EQ EFX	Date: 11-10-22	Time: 11 am	
Comments:			



EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax: 856-786-5974
EMSL-CIN-01

EMSL Order ID: 012252480

LIMS Reference ID: AA52480

EMSL Customer ID: ELES42

November 25, 2022

David Bertsch
Element Environmental Solutions, Inc. [ELES42]
61 Willow Street, PO Box 921
Adamstown, PA 19501

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 11/11/2022. The results are tabulated on the attached pages for the following client designated project:

Chester Upland SD-School of Arts

The reference number for these samples is EMSL Order #: AA52480 . Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact the lab at 856-858-4800.

Owen McKenna Laboratory Manager or other approved signatory

Table of Contents

Cover Letter	1
Sample Condition on Receipt	3
Samples in Report	4
Positive Hits Summary	5
Sample Results	6
Quality Assurance Results	7
Certified Analyses	9
Certifications	9
Qualifiers, Definitions and Disclaimer	10
Chain of Custody PDF	11

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax: 856-786-5974
EMSL-CIN-01

EMSL Order ID: 012252480**LIMS Reference ID:** AA52480**EMSL Customer ID:** ELES42

Attention: David Bertsch
Element Environmental Solutions, Inc. [ELES42]
61 Willow Street, PO Box 921
Adamstown, PA 19501
(717) 484-5111
iaq@e2s.us

Project Name: Chester Upland SD-School of Arts
Customer PO:
EMSL Sales Rep: Gary Perlmutter
Received: 11/11/2022 09:20
Reported: 11/25/2022 13:47

Sample Condition on Receipt**Cooler ID:** Default Cooler**Temperature:** 19.3 °C

Custody Seals	Y
Containers Intact	Y
COC/Labels Agree	Y
Preservation Confirmed	Y

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

EMSL Order ID: 012252480**LIMS Reference ID:** AA52480**EMSL Customer ID:** ELES42

Attention: David Bertsch
Element Environmental Solutions, Inc. [ELES42]
61 Willow Street, PO Box 921
Adamstown, PA 19501
(717) 484-5111
iaq@e2s.us

Project Name: Chester Upland SD-School of Arts
Customer PO:
EMSL Sales Rep: Gary Perlmutter
Received: 11/11/2022 09:20
Reported: 11/25/2022 13:47

Samples in this Report

Lab ID	Sample	Matrix	Date Sampled	Date Received
AA52480-01	CUSA-11/8-01 PCB	Solid	11/08/2022	11/11/2022

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax: 856-786-5974
EMSL-CIN-01

EMSL Order ID: 012252480**LIMS Reference ID:** AA52480**EMSL Customer ID:** ELES42

Attention: David Bertsch
Element Environmental Solutions, Inc. [ELES42]
61 Willow Street, PO Box 921
Adamstown, PA 19501
(717) 484-5111
iaq@e2s.us

Project Name: Chester Upland SD-School of Arts
Customer PO:
EMSL Sales Rep: Gary Perlmutter
Received: 11/11/2022 09:20
Reported: 11/25/2022 13:47

Positive Hits Summary

Lab ID	Client ID				Sampled
AA52480-01	CUSA-11/8-01 PCB				11/08/22 00:00
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW 846-8082A	Aroclor-1254	1.4		mg/kg	11/15/2022 18:05
SW 846-8082A	Aroclor-1260	0.41		mg/kg	11/15/2022 18:05

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
 Telephone: 856-858-4800 Fax: 856-786-5974
 EMSL-CIN-01

EMSL Order ID: 012252480**LIMS Reference ID:** AA52480**EMSL Customer ID:** ELES42

Attention: David Bertsch
 Element Environmental Solutions, Inc. [ELES42]
 61 Willow Street, PO Box 921
 Adamstown, PA 19501
 (717) 484-5111
 iaq@e2s.us

Project Name: Chester Upland SD-School of Arts
Customer PO:
EMSL Sales Rep: Gary Perlmutter
Received: 11/11/2022 09:20
Reported: 11/25/2022 13:47

Sample Results

Sample: CUSA-11/8-01 PCB
 AA52480-01 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.25	mg/kg	11/11/22 09:01	11/15/22 18:05	RAG/PxM	SW846 3540C	SW 846-8082A
Aroclor-1221	ND		1	0.25	mg/kg	11/11/22 09:01	11/15/22 18:05	RAG/PxM	SW846 3540C	SW 846-8082A
Aroclor-1232	ND		1	0.25	mg/kg	11/11/22 09:01	11/15/22 18:05	RAG/PxM	SW846 3540C	SW 846-8082A
Aroclor-1242	ND		1	0.25	mg/kg	11/11/22 09:01	11/15/22 18:05	RAG/PxM	SW846 3540C	SW 846-8082A
Aroclor-1248	ND		1	0.25	mg/kg	11/11/22 09:01	11/15/22 18:05	RAG/PxM	SW846 3540C	SW 846-8082A
Aroclor-1254	1.4		1	0.25	mg/kg	11/11/22 09:01	11/15/22 18:05	RAG/PxM	SW846 3540C	SW 846-8082A
Aroclor-1260	0.41		1	0.25	mg/kg	11/11/22 09:01	11/15/22 18:05	RAG/PxM	SW846 3540C	SW 846-8082A
Aroclor-1262	ND		1	0.25	mg/kg	11/11/22 09:01	11/15/22 18:05	RAG/PxM	SW846 3540C	SW 846-8082A
Aroclor-1268	ND		1	0.25	mg/kg	11/11/22 09:01	11/15/22 18:05	RAG/PxM	SW846 3540C	SW 846-8082A
Surrogate(s)	Recovery	Q		Limits						
<i>Surrogate: Tetrachloro-m-xylene</i>	26%			21-123		11/11/22 09:01	11/15/22 18:05	RAG/PxM	SW846 3540C	SW 846-8082A
<i>Surrogate: Decachlorobiphenyl</i>	34%			17-128		11/11/22 09:01	11/15/22 18:05	RAG/PxM	SW846 3540C	SW 846-8082A

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
 Telephone: 856-858-4800 Fax: 856-786-5974
 EMSL-CIN-01

EMSL Order ID: 012252480**LIMS Reference ID:** AA52480**EMSL Customer ID:** ELES42

Attention: David Bertsch
 Element Environmental Solutions, Inc. [ELES42]
 61 Willow Street, PO Box 921
 Adamstown, PA 19501
 (717) 484-5111
 iaq@e2s.us

Project Name: Chester Upland SD-School of Arts
Customer PO:
EMSL Sales Rep: Gary Perlmutter
Received: 11/11/2022 09:20
Reported: 11/25/2022 13:47

Quality Control**GC-SVOA**

Analyte	Result Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	-------------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BAK0048 - SW846 3540C**Blank (BAK0048-BLK1)**

Prepared: 11/11/2022 Analyzed: 11/14/2022

Aroclor-1016	ND	0.25	mg/kg
Aroclor-1016 [2C]	ND	0.25	mg/kg
Aroclor-1221	ND	0.25	mg/kg
Aroclor-1221 [2C]	ND	0.25	mg/kg
Aroclor-1232	ND	0.25	mg/kg
Aroclor-1232 [2C]	ND	0.25	mg/kg
Aroclor-1242	ND	0.25	mg/kg
Aroclor-1242 [2C]	ND	0.25	mg/kg
Aroclor-1248	ND	0.25	mg/kg
Aroclor-1248 [2C]	ND	0.25	mg/kg
Aroclor-1254	ND	0.25	mg/kg
Aroclor-1254 [2C]	ND	0.25	mg/kg
Aroclor-1260	ND	0.25	mg/kg
Aroclor-1260 [2C]	ND	0.25	mg/kg
Aroclor-1262	ND	0.25	mg/kg
Aroclor-1262 [2C]	ND	0.25	mg/kg
Aroclor-1268	ND	0.25	mg/kg
Aroclor-1268 [2C]	ND	0.25	mg/kg

Surrogate(s)

Surrogate: Tetrachloro-m-xylene	0.5000	57	21-123
Surrogate: Decachlorobiphenyl	0.5000	74	17-128

Blank (BAK0048-BLK2)

Prepared: 11/11/2022 Analyzed: 11/15/2022

Aroclor-1016	ND	0.25	mg/kg
Aroclor-1016 [2C]	ND	0.25	mg/kg
Aroclor-1221	ND	0.25	mg/kg
Aroclor-1221 [2C]	ND	0.25	mg/kg
Aroclor-1232	ND	0.25	mg/kg
Aroclor-1232 [2C]	ND	0.25	mg/kg
Aroclor-1242	ND	0.25	mg/kg
Aroclor-1242 [2C]	ND	0.25	mg/kg
Aroclor-1248	ND	0.25	mg/kg
Aroclor-1248 [2C]	ND	0.25	mg/kg
Aroclor-1254	ND	0.25	mg/kg
Aroclor-1254 [2C]	ND	0.25	mg/kg
Aroclor-1260	ND	0.25	mg/kg
Aroclor-1260 [2C]	ND	0.25	mg/kg
Aroclor-1262	ND	0.25	mg/kg
Aroclor-1262 [2C]	ND	0.25	mg/kg
Aroclor-1268	ND	0.25	mg/kg
Aroclor-1268 [2C]	ND	0.25	mg/kg

Surrogate(s)

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
 Telephone: 856-858-4800 Fax: 856-786-5974
 EMSL-CIN-01

EMSL Order ID: 012252480**LIMS Reference ID:** AA52480**EMSL Customer ID:** ELES42

Attention: David Bertsch
 Element Environmental Solutions, Inc. [ELES42]
 61 Willow Street, PO Box 921
 Adamstown, PA 19501
 (717) 484-5111
 iaq@e2s.us

Project Name: Chester Upland SD-School of Arts
Customer PO:
EMSL Sales Rep: Gary Perlmutter
Received: 11/11/2022 09:20
Reported: 11/25/2022 13:47

Quality Control (Continued)

GC-SVOA (Continued)

Analyte	Result Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	-------------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------

Batch: BAK0048 - SW846 3540C (Continued)**Blank (BAK0048-BLK2)**

Prepared: 11/11/2022 Analyzed: 11/15/2022

Surrogate(s)

Surrogate: Tetrachloro-m-xylene 0.5000 40 21-123
Surrogate: Decachlorobiphenyl 0.5000 58 17-128

LCS (BAK0048-BS1)

Prepared: 11/11/2022 Analyzed: 11/14/2022

Aroclor-1016 3.22 0.25 mg/kg 5.000 64 37-104
 Aroclor-1260 3.29 0.25 mg/kg 5.000 66 45-121

Surrogate(s)

Surrogate: Tetrachloro-m-xylene 0.5000 65 21-123
Surrogate: Decachlorobiphenyl 0.5000 78 17-128

LCS (BAK0048-BS2)

Prepared: 11/11/2022 Analyzed: 11/15/2022

Aroclor-1016 2.41 0.25 mg/kg 5.000 48 37-104
 Aroclor-1260 2.54 0.25 mg/kg 5.000 51 45-121

Surrogate(s)

Surrogate: Tetrachloro-m-xylene 0.5000 42 21-123
Surrogate: Decachlorobiphenyl 0.5000 57 17-128

Matrix Spike (BAK0048-MS2)**Source: AA52394-01**

Prepared: 11/11/2022 Analyzed: 11/15/2022

Aroclor-1016 2.58 0.25 mg/kg 4.926 ND 52 30-133
 Aroclor-1260 4.39M1 0.25 mg/kg 4.926 3.12 26 30-134

Surrogate(s)

Surrogate: Tetrachloro-m-xylene 0.4926 40 21-123
Surrogate: Decachlorobiphenyl 0.4926 61 17-128

Matrix Spike Dup (BAK0048-MSD2)**Source: AA52394-01**

Prepared: 11/11/2022 Analyzed: 11/15/2022

Aroclor-1016 2.36 0.25 mg/kg 4.902 ND 48 30-133 9 28
 Aroclor-1260 4.14M1 0.25 mg/kg 4.902 3.12 21 30-134 6 28

Surrogate(s)

Surrogate: Tetrachloro-m-xylene 0.4902 40 21-123
Surrogate: Decachlorobiphenyl 0.4902 57 17-128

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
 Telephone: 856-858-4800 Fax: 856-786-5974
 EMSL-CIN-01

EMSL Order ID: 012252480**LIMS Reference ID:** AA52480**EMSL Customer ID:** ELES42

Attention: David Bertsch
 Element Environmental Solutions, Inc. [ELES42]
 61 Willow Street, PO Box 921
 Adamstown, PA 19501
 (717) 484-5111
 iaq@e2s.us

Project Name: Chester Upland SD-School of Arts
Customer PO:
EMSL Sales Rep: Gary Perlmutter
Received: 11/11/2022 09:20
Reported: 11/25/2022 13:47

Certified Analyses included in this Report

Analyte	CAS #	Certifications
<i>SW 846-8082A in Solid</i>		
Aroclor-1016	2674-11-2	NJDEP,PADEP,NYSDOH
Aroclor-1221	11104-28-2	NJDEP,PADEP,NYSDOH
Aroclor-1232	11141-16-5	NJDEP,PADEP,NYSDOH
Aroclor-1242	53469-21-9	NJDEP,PADEP,NYSDOH
Aroclor-1248	12672-29-6	NJDEP,PADEP,NYSDOH
Aroclor-1254 [2C]	11097-69-1	NJDEP,PADEP,NYSDOH
Aroclor-1260	11096-82-5	NJDEP,PADEP,NYSDOH
Aroclor-1262	37324-23-5	NJDEP,PADEP,NYSDOH
Aroclor-1268	11100-14-4	NJDEP,PADEP,NYSDOH

List of Certifications

Code	Description	Number	Expires
California ELAP	California Water Boards	1877	06/30/2023
A2LA	A2LA Environmental Certificate	2845.01	07/31/2024
AIHA ELLAP 39	EMSL Analytical, Inc. St. Louis, MO AIHA-LAP, LLC-ELLAP Accredited	102636	06/23/2023
NJDEP	New Jersey Department of Environmental Protection	03036	06/30/2023
PADEP	Pennsylvania Department of Environmental Protection	68-00367	11/30/2023
NYSDOH	New York State Department of Health	10872	04/01/2023
CTDPH	Connecticut Department of Public Health	PH-0270	06/23/2023

Please see the specific Field of Testing (FOT) on www.emsl.com <<http://www.emsl.com>> for a complete listing of parameters for which EMSL is certified.

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax: 856-786-5974
EMSL-CIN-01

EMSL Order ID: 012252480**LIMS Reference ID:** AA52480**EMSL Customer ID:** ELES42

Attention: David Bertsch
Element Environmental Solutions, Inc. [ELES42]
61 Willow Street, PO Box 921
Adamstown, PA 19501
(717) 484-5111
iaq@e2s.us

Project Name: Chester Upland SD-School of Arts
Customer PO:
EMSL Sales Rep: Gary Perlmutter
Received: 11/11/2022 09:20
Reported: 11/25/2022 13:47

Notes and Definitions

Item	Definition
M1	The spike recovery for this QC sample is outside of established control limits possibly due to sample matrix interference. Laborato
[2C]	Reported from the second channel in dual column analysis.
DF	Dilution Factor
MDL	Method Detection Limit.
ND	Analyte was NOT DETECTED at or above the detection limit.
Q	Qualifier
RL	Reporting Limit
%REC	Percent Recovery
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated

Measurement of uncertainty and any applicable definitions of method modifications are available upon request. Per EPA NLLAP policy, sample results are not blank corrected.



EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Environmental Chemistry Chain of Custody

EMSL Order Number (Lab Use Only):

AA 52480

EMSL Analytical, Inc.
200 Route 130 North

Cinnaminson, NJ 08077
PHONE: 1-800-220-3675
FAX: (856) 786-5974

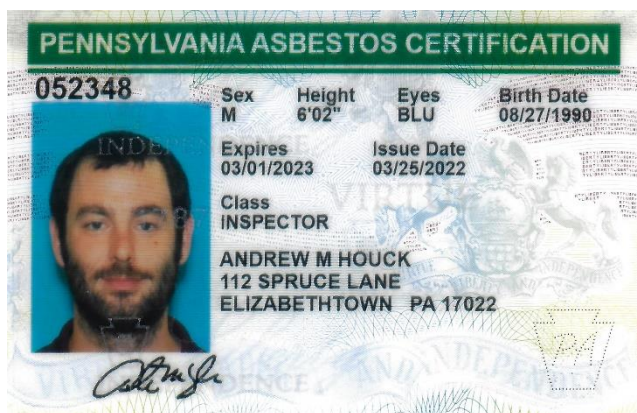
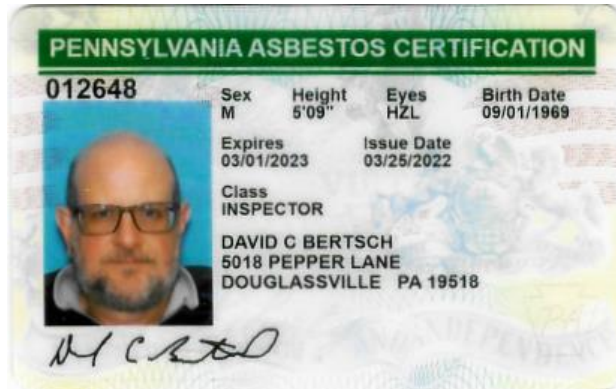
Report To Contact Name: David Bertsch				Bill To Company: Element Environmental Solutions			
Company Name: Element Environmental Solutions				Attention To: David Bertsch			
Street: 61 Willow Street PO Box 921				Street: 61 Willow Street, PO Box 921			
City: Adamstown	State/Province: PA	Zip/Postal Code: 19501		City: Adamstown	State/Province: PA	Zip/Postal Code: 19501	
Phone: 717-484-5111		Fax:		Phone: 717-484-5111		Fax:	
Project Name: Chester Upland SD - School of the Arts				Email Results To: dave@e2s.us, IAA@e2s.us		Purchase Order: 1450.0001	
U.S. State where Samples Collected: PA				Number of Samples in Shipment: 1		Date of Shipment: 11/9/2022	
Sample for Compliance? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, NPDES? <input type="checkbox"/> Other (Specify):							
Samples Collected by: EMSL <input type="checkbox"/> Client <input checked="" type="checkbox"/> check one				Sampled By (Signature): <i>Michael Spica</i>		Samples Received Chilled (Y/N):	
Standard Turnaround Time: <input checked="" type="checkbox"/> 2 Weeks				The following TATs are subject to lab approval: <input type="checkbox"/> 1 Week <input type="checkbox"/> 4 Days <input type="checkbox"/> 3 Days <input type="checkbox"/> 2 Days <input type="checkbox"/> 1 Day			
Failure to complete will hinder processing of samples				Matrix	Preservative	List Test(s) Needed	
Client Sample ID	Comp	Grab	Collect Date/Time	W=Water S=Soil A=Air SL=Sludge O= Other	1=HCL 2=HNO3 3=H2SO4 4=ICE 5=Other	PCB in Caulk (BULK)	Field pH Field pH Test Time Field Temp. Deg C Field Temp. Test Time
1. CUSA-1118-01 PCB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	11/8/2022	W	5	X	PCB in Caulk (BULK)
	<input type="checkbox"/>	<input type="checkbox"/>					
	<input type="checkbox"/>	<input type="checkbox"/>					
	<input type="checkbox"/>	<input type="checkbox"/>					
	<input type="checkbox"/>	<input type="checkbox"/>					
Released By (Signature)		Date & Time		Received By		Date & Time	
<i>Michael Spica</i>		11/9/2022		<i>Colleen Palladino</i>		11/10/22 9:20AM	
Please indicate reporting requirements: <input checked="" type="checkbox"/> Results Only <input type="checkbox"/> Results and QC <input type="checkbox"/> Reduced Deliverables <input type="checkbox"/> Disk Deliverable <input type="checkbox"/> Other							
Instructions or Comments: Note: Field pH and Field Temperature are tested on the same day as the date of sample collection.							

11

Appendix B

Accreditations and XRF Calibration

Asbestos Building Inspector
Certifications





INSTRUMENT CALIBRATION REPORT



Pine Environmental Services LLC

92 North Main St, Building 20

Windsor, NJ 08561

Toll-free: (800) 301-9663

Pine Environmental Services, Inc.

Instrument ID 24918

Description Innov-X Delta Series XRF

Calibrated 10/28/2022 12:44:10PM

Manufacturer Innov-X/Olympus Systems

Model Number DC-2000

Serial Number/ Lot 560920

Number

Location New Jersey

Department

State Certified

Status Pass

Temp °C 23

Humidity % 25

Calibration Specifications

Group # 1

Group Name Function Test

Test Performed: Yes

As Found Result: Pass

As Left Result: Pass

Test Instruments Used During the Calibration

<u>Test Standard ID</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Model Number</u>	<u>Serial Number / Lot Number</u>	<u>(As Of Cal Entry Date)</u> <u>Next Cal Date /</u> <u>Last Cal Date/ Expiration Date</u> <u>Opened Date</u>
-------------------------	--------------------	---------------------	---------------------	---------------------------------------	--

Notes about this calibration

Calibration Result Calibration Successful

Who Calibrated David Galego

All instruments are calibrated by Pine Environmental Services LLC according to the manufacturer's specifications, but it is the customer's responsibility to calibrate and maintain this unit in accordance with the manufacturer's specifications and/or the customer's own specific needs.

Notify Pine Environmental Services LLC of any defect within 24 hours of receipt of equipment
Please call 800-301-9663 for Technical Assistance