SECTION 01 1000
SUMMARY OF WORK

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. The Project consists of roof replacement and interior renovations aas defined within the Invitation and Instructions to Bidders and as depicted on the accompanying Contract Drawings and the Technical Specifications.

1. Project Name: Multile Building Envelope Renovations and Related Work
   School 29 and Pearls Hawthorne School
2. Project Location: 29 Croydon Avenue and 350 Hawthorne Avenue, Yonkers Public Schools
3. Owner: Yonkers Public Schools

B. Contract Documents were prepared for the Project by Fuller and D'Angelo, P.C., Architect and Planners

1.3 CONTRACTS

A. Contract Type: Multiple prime contracts each based on a Stipulated Price as described in Section A .

B. Contract Type: Multiple contracts are separate contracts, representing significant construction activities, between Owner and separate contractors. Each contract is performed concurrently and coordinated closely with construction activities performed on Project under other contracts. Contracts for this Project include the following:

1. General Contractor - Contract #1 School 29
2. General Contractor - Contract #2 Hawthorne Pearls
3. Plumbing Contractor - Contract #3 Pearls Hawthorne
4. Electrical Contractor - Contract #4 Pearls Hawthorne

C. The work of each separate prime contract are identified in this section, specifications and on the Drawings.

D. Local custom and trade-union jurisdictional settlements do not control the scope of Work included in each prime contract. When a potential jurisdictional dispute or similar interruption of work is first identified or threatened, the affected contractor(s) shall promptly negotiate a reasonable settlement to avoid or minimize the pending interruption and delays.

E. If it becomes necessary to refer to the contract documents to determine which prime contract includes a specific element of required work, begin by referring to the prime contracts, themselves; then, if a determination cannot be made from the prime contracts, refer, in the following order, to the Supplementary Conditions, this section of the Specifications, followed by the other Division - 1 sections and finally with the drawings and other sections of the specifications.

F. If, after referring to the contract documents, it cannot be clearly determined which prime contractor will perform a specific item of required work, then that item of work will be brought to the architect's or construction manager's attention in writing for determination.

G. Summary of references: Work of the prime contracts can be summarized by reference to the prime contracts, General Conditions, Instructions to bidders, specification sections, drawings, addenda, or Modifications to Contract Documents issued subsequent to the initial printing of this Project Manual, and including but not necessarily limited to printed material referenced by any of these. It is recognized that the work of the prime contracts is unavoidably affected or influenced by governing regulations, natural phenomenon, including weather conditions, and other forces outside the contract documents.

H. Contractors shall include all labor materials, plans, tools, equipment, and supervision which are required for or incidental to the proper completion of the work as indicated on the drawings and described in the following specification sections.

DIVISION 0 - BIDDING DOCUMENTS, CONTRACTS AND CONDITIONS (Applicable to all contracts)

COVER PAGE

IMPORTANT INFORMATION FOR BIDDERS

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1.4 CONTRACT No. 1 - GENERAL CONSTRUCTION - SCHOOL 29

A. In addition to the General Requirements, Division 1, included in this bid package the General Construction Contractor -School 29 shall provide for proper completion of the roof replacement work and construction, as indicated on drawings Title Sheet, G-1, ASB-102, PS29 A110, PS29 A625, PS29 A626, PS29 A627, PS29 A628, PS29 A629, PS29 A630, PS29 A631 and in accordance with the terms and conditions described in the following specification sections. :

DIVISION 02 -EXISTING CONDITIONS

02 0200 ASBESTOS REMOVAL AND DISPOSAL

DIVISION 04 - MASONRY

04 0100 ROOF RELATED MASONRY MAINTENANCE

DIVISION 05 - METALS

05 5000 METAL FABRICATIONS

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07 5323 EPDM ROOFING

07 6200 SHEET METAL FLASHINGS AND SPECIALTIES

07 7200 ROOF ACCESSORIES

07 9005 JOINT SEALERS

DIVISION 08 - OPENINGS

08 1830 ALUMINUM FRAMES AND ALUMINUM FRP DOORS

08 4500 TRANSLUCENT WALL ASSEMBLIES

DIVISION 09 - FINISHES

09 9113 EXTERIOR PAINTING

1.5 CONTRACT No. 2 - GENERAL CONSTRUCTION - PEARLS HAWTHORNE

A. In addition to the General Requirements, Division 1, included in this bid package the General Construction Contractor -Pearls Hawthorne shall provide for proper completion of the roof replacement work, interior and exterior construction, as indicated on drawings Title Sheet, G-1, PHS ASB-103, PHS ASB 104, PHS L1, PHS A100, PHS A101, PHS A102, PHS A103, PHS A110, PHS A300, PHS A301, PHS A302, PHS A430, PHS A431, PHS A432, PHS A825, PHS A 826, PHS A827 and PHS A828, and in accordance with the terms and conditions described in the following specification sections. :

DIVISION 02 -EXISTING CONDITIONS

02 0200 ASBESTOS REMOVAL AND DISPOSAL

DIVISION 03 - CONCRETE

03 3000 CAST-IN-PLACE CONCRETE

DIVISION 04 - MASONRY

04 0100 ROOF RELATED MASONRY MAINTENANCE

04 0110 GENERAL MAINTENANCE OF MASONRY

DIVISION 05 - METALS

05 5000 METAL FABRICATIONS

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

06 1000 ROUGH CARPENTRY

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

07 1800 TRAFFIC COATING

07 1900 WATER REPELLANTS

07 5323 EPDM ROOFING

07 6200 SHEET METAL FLASHINGS AND SPECIALTIES

07 7200 ROOF ACCESSORIES

07 9005 JOINT SEALERS

DIVISION 09 - FINISHES

A. 09 2400 CEMENT PLASTERING

09 9113 EXTERIOR PAINTING

DIVISION 31 - EARTHWORK

31 2316 EXCAVATION

DIVISION 32 – EXTERIOR IMPROVEMENTS

32 1313 CONCRETE PAVING AND CURBS

DIVISION 33 - UTILITIES

A. 33 4111 SITE STORM DRAINAGE PIPING AND STRUCTURES

SPECIAL NOTES: CONTRACT #2 - GENERAL CONSTRUCTION -PEARLS HAWTHORNE

All existing slab sawcut, excavation, crushed stone, backfill and concrete slab replacement for sub-slab piping will be by General Constriction Contract No.2.

1.6 CONTRACT No. 3 - PLUMBING CONSTRUCTION

In addition to the General Requirements, Division 1, included in this bid package shall provide for proper completion of all Plumbing work as indicated on drawing PHS P103 and in accordance with the terms and conditions described in the following specification sections:

DIVISION 22 - PLUMBING

22 1005 PLUMBING PIPING

A. 22 1343 DUPLEX SUMP PUMP

SPECIAL NOTES: CONTRACT No. 5 PLUMBING CONSTRUCTION:

All existing slab sawcut, excavation, crushed stone, backfill and concrete slab replacement for subslab piping will be by General Constriction Contract No.2.

PC Contract #5 will install sealant around perimeter of all toilet / plumbing fixtures.

A.

1.7 CONTRACT No. 5 - ELECTRICAL CONSTRUCTION

In addition to the General Requirements, Division 1, included in this bid package shall provide for proper completion of the electrical work and related construction as indicated on drawings PHS E100 and PHS A101, and in accordance with the terms and conditions described in the following specification sections:

00 4440 OWNER SUPPLIED CONTRACTOR INSTALLED ITEMS

DIVISION 26 - ELECTRICAL

26 0519 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

26 0526 GROUNDING AND BONDING OF ELECTRICAL SYSTEMS

26 0534 CONDUIT

26 0535 SURFACE RACEWAY

DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

28 3100 MODIFICATIONS TO EXISTING FIRE DETECTION AND ALARM SYSTEM.

1.8 CONTRACTOR USE OF PREMISES

A. Construction Operations: Limited to areas designated by the Owner.

B. Arrange use of site and premises to allow:
   1. Yonkers City Schools occupancy.
   2. Work by Others.
   3. Use of site and premises by the public.

C. Provide access to and from site as required by law and by School District personnel:
   1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
   2. Do not obstruct roadways, sidewalks, or other public ways without permit.

D. Existing building spaces may not be used for storage unless approved by the Owner..

E. Contractors shall comply with Local Noise Ordinance. Work disrupting the community must be performed with the following hours:
   1. Monday thru Friday: 8 AM to 8 PM.
   2. Weekends/ Holidays: 9 AM to 6 PM.

F. General: Limitations on site usage as well as specific requirements that impact utilization are indicated on the drawings and by other contract documents. In addition to these limitations and requirements, the Contractor shall administer allocation of available space equitably among the separate sub contractors and other entities needing access and space, so as to produce the best overall efficiency in performance of the total work of the project. The Contractor shall schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on site.

G. Only materials and equipment, which are to be used directly in the work, shall be brought to and stored on the project site by the Contractor. After equipment is no longer required for the work, it shall be promptly removed from the project site. Protection of construction materials and equipment stored at the project site from weather, theft, damage and all other adversity is solely the responsibility of the Contractors.

H. Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds to the areas indicated. If additional storage is necessary obtain and pay for such storage off-site.

I. The Contractor(s) and any entity for which the Contractor is responsible shall not erect any sign on the Project site without the prior written consent of the Owner, which may be withheld in the sole discretion of the Owner.

J. Contractor shall ensure that the work, at all times, is performed in a manner that affords reasonable access, both vehicular and pedestrian, to the site of the work and all adjacent areas. The work shall be performed, to the fullest extent reasonably possible, in such a manner that public areas adjacent to the site of the work shall be free from all debris, building materials and equipment likely to cause hazardous conditions. Without limitation of any other provision of the Contract Documents, contractor shall use its best efforts to minimize any interference with the occupancy or beneficial use of:
   1. Any areas and buildings adjacent to the site of the work or;
   2. The Building in the event of partial occupancy as more..

K. Without prior approval of the Owner, the Contractor shall not permit any workers to use any existing facilities at the Project site, including, without limitations, lavatories, toilets, entrances and parking areas other than those designated by the Owner. Without limitation of any other provision of the Contract Documents, the Contractor shall use its best efforts to comply with the rules and regulations promulgated by the Owner in connection with the use and occupancy of the Project Site, and the Building, as amended from time to time. The Contractor shall immediately notify the Owner in writing if during the performance of the Work, the Contractor finds compliance with any portion of such rules and regulations to be impracticable, setting forth the problems of such compliance and suggesting alternatives through which the same results intended by such portions of the rules and regulations can be achieved. The Owner may, in the Owner's sole discretion, adopt such suggestions, develop new alternatives or require compliance with the existing requirements of the rules and regulations. The Contractor shall also comply with all insurance requirements, applicable to use, and occupancy of the Project Site and the Building.

L. Maintain the existing building in a safe and weathertight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period. When work is scheduled after hours clean and remove all temporary barriers and protection so that the building can be occupied the following day when normal building occupancy will occur.

M. Keep public areas such as hallways, stairs, elevator lobbies and toilet rooms free from accumulation of waste material, rubbish or construction debris.

N. Smoking, drinking of alcoholic beverages or open fires will not be permitted on the project site.

O. Utility Outages and Shutdown:
1. Limit disruption of utility services to hours the building is unoccupied, weekends, or holidays.
2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Yonkers and authorities having jurisdiction.
3. Prevent accidental disruption of utility services to other facilities.
4. All costs for manning of temporary shutdowns and utility crossovers, including firewatch if needed is included in the contractor's bid, regardless of weekend, holiday, etc

1.9 OCCUPANCY REQUIREMENTS

A. Full Owner Occupancy: The Owner will occupy the site and existing building during the entire construction period. Cooperate with the Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with the Owner's operations.

B. Partial owner Occupancy: The Owner reserves the right to occupy the place and install equipment in completed areas of the building prior to Substantial Completion, provided such occupancy does not interfere with completion of the Work, Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.
1. The Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner occupancy.
2. Obtain a Certificate of Occupancy from local building officials prior to Owner occupancy.
3. Prior to partial Owner occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy, the Owner will operate and maintain mechanical and electrical systems serving occupied portions of the building.
4. Upon occupancy, the Owner will assume responsibility for maintenance and custodial service for occupied portions of the building.

1.10 DEFINITIONS

A. A. Definitions as applied to "Contractors" involved with the work of this Project.
1. Contractor" or "Contractor" meaning that Respective Prime Contractor normally responsible for that work referenced;
2. Prime Contractor" meaning either the - General Trades, Plumbing, HVAC or Electrical Contractors normally responsible for the referenced work;
3. Contractor" meaning that Respective Prime Contractor as above; and such other terms relating to Contractors to be taken in context with respect to referenced work.
4. Further, wherein said Division 0 and 1 and respective Sections therein, any reference is made to "General Contractor", same shall be construed to mean "Contractor for the General Construction".
5. The Architect cannot guarantee the correctness of the existing conditions shown and assumes no responsibility therefore. It shall be the responsibility of the Contractor to visit the site and verify all existing conditions prior to bid.

B. The Owner will purchase certain items required for the overall operation of this facility.
1. The Contractor(s) will cooperate with said vendors as may be necessary to permit the work to be accomplished.
2. The cooperation may extend to the receiving, unloading and placement of said equipment if directed by the Owner.
3. Terms of payment, if any, shall be in accordance with Article 7 of the General Conditions as amended or modified.

C. The Contractor is advised that the Owner may enter into separate contracts as may be in their best interests.

D. The Contractor is further advised that there will be a full time on-site Project Representative/ Construction Manager, whose duties will be defined at the pre-construction meeting.

1.11 ADDITIONAL SECURITY PROVISIONS

A. All Contractors' employees shall use a single means of access and egress, except in the case of emergency, to be designated by the Construction Manager.

B. Each Contractor and each Subcontractor, while on the job site, must wear, in a conspicuous location, a Photo I.D. badge bearing the name of the Contractor. The badges of each Contractor shall be numbered consecutively.

1.12 ASBESTOS AND LEAD PAINT AWARENESS REQUIREMENTS

A. Contractor agrees not to use or permit the use of any asbestos containing material in or on any property belonging to the Owner.

B. For purposes of this requirement, asbestos free shall mean free from all forms of asbestos, including - actinolite, amosite, anthrophyhllite, chrysotile, cricidolite and tremolite, both in friable and non-friable states and without regard to the purposes for which such material is used.

C. Contractors will investigate / verify then carefully demolish existing ceiling items so as not to disturb any asbestos containing fittings and / or insulation which may be located above existing ceilings.

1.13 CONSTRUCTION TIME AND PHASING REQUIREMENTS

A. The Contractor is advised the “time is of the essence” of the Contract as defined in Article 8 of the “General Conditions” for the completion of the construction of the facility. It is understood that the work is to be carried through to completion with the utmost speed consistent with good workmanship. Time of Completion shall be as established in the Milestone Schedule. Further, safe and legal ingress and egress shall be maintained at all times to and through the occupied portions of the construction site.

B. Work shall proceed in such a manner as to cause the least amount of disruption to the ongoing operations as possible.

C. Upon request by the Contractor, the building may be made available, at the discretion of the Owner, and at the Cost to the Contractor, during such times as are allowed by local noise ordinance, in addition to the above listed hours. A request for use during these off-regular hours must be made at least two (2) days before the use. Such off-hours may include Saturdays, and Holidays.

D. If the Contractor requests the use of the facility for off-hours to maintain the scheduled completion date, the Contractor shall pay all additional costs in connection with opening, providing security and project management expenses incurred with no costs to the Owner. All expenses shall be deducted from the Contractors contract price. Comply with other portions of this Section.

1. Weekend, Holiday and Night Work:
    a. The contractor shall make no claim for delay for the inability of the Owner to make the site available for off-hours work. Should the Owner make the site available during these hours at the contractor's request, the cost will be borne by the Contractor.

E. THE CONTRACTOR SHALL BE REQUIRED TO PERFORM SCHEDULED WORK WITHIN THE EXISTING BUILDING ONLY DURING THE TIME PERIODS INDICATED AND SHALL INCLUDE IN THE BID ALL COSTS FOR LABOR, MATERIAL, ETC. INCLUDING PREMIUM TIME TO PERFORM THE WORK, PER PHASE PER TIME PERIOD.

1. All work and storage areas shall be completely enclosed by a fence or barricade at all times so that no student or the public can approach the area or the equipment. The Contractor shall maintain fences and barricades at all times and shall:
2. Repair/ restore and/ or pay for any temporary fencing damaged by their work.
3. Maintain at all times, all exits and walkways from the Building.
4. Where the barricade is removed for work, the Contractor performing such work shall provide adequate safety personnel to prevent unauthorized persons from approaching the work area.

1.14 CONSTRUCTION PHASING

A. The phasing and/ or milestone schedule contained in the contract has been established for the overall construction of the project.

B. The Contractor is advised that areas of the existing buildings which are to be added to and / or altered under this Contract will remain in use during construction, coordinate with Section 01500 for temporary facilities.

C. Electrical and mechanical services to the functioning spaces shall be maintained at all times.

D. Swing-overs to new facilities shall be made so as to cause the least interruption to the facilities' operations.

E. Limit utility shutdowns to two consecutive non-school work days including weekends or holidays at no additional cost to the Owner unless prior agreement is made with the operating personnel of the facility.

F. The Contractor shall provide and maintain all required separations between old and new construction to prevent:
   1. Unauthorized entrance to construction areas by others than Architect, Construction Manager or Owner.
   2. Heat loss from existing buildings.
   3. Water (rain or ground water) infiltration into existing building.

1.15 FIELD MEASUREMENTS

A. Each Respective Contractor shall take all necessary field measurements prior to fabrication and installation of work and shall assume complete responsibility for accuracy of same.

B. This project is an ALTERATION and therefore necessitates additional attention to existing conditions receiving newly fabricated and installed equipment, i.e. note the requirements for field dimensioning of shop fabricated items whether or not so required by each technical section.

1.16 INITIAL SUBMITTAL REQUIREMENTS

A. Each Contractor shall provide items noted including - bonds, insurance, emergency telephone numbers, progress scheduling, schedules of submittals, subcontractor listings and the like prior to the start of any work.

1.17 SCHEDULES

A. The schedule presented in the documents is for bidding and identification of milestones. Due to the nature of the work, it is the intention of the Construction Manager to coordinate actual work periods and tasks / sequencing for the project among the various Prime Contractors involved with this bidding process, as well as separate contractors involved with other phases of the work solicited under separate proposals. Each Contractor shall, under terms of the General Conditions, mutually cooperate in the rescheduling of work to permit an uninterrupted use of the facilities by the Owner, without additional cost to the Owner.
   1. General
      a. The objective of this project is to complete the overall work in the shortest period of time and to protect the building and occupants from damages caused by weather and construction activity during the progress of the work.
      b. To meet these objectives, the Contractor shall plan the work, obtain materials, and execute the construction in the most expeditious manner possible in accordance with the requirements listed below.
      c. If the Contractor fails to expedite and pursue any part of the work, the Owner may terminate the contract as per the General Conditions.
      d. The Contractor shall work in coordination with work of other Contractors and with school activities with special attention to noise, dust, safety and other contract requirements for work in and around the occupied buildings.

1.18 ADDITIONAL REQUIREMENTS

A. The following are additional general and special requirements which will govern the work of the projects covered by these Documents.

1. If it appears that some of the work cannot be completed by the scheduled date, the Contractor shall increase the work force or increase the hours of work, including evenings and weekends or necessary, at no additional cost to the Owner.
2. If the work is complete but the area is not cleaned and debris or equipment is not removed, the Owner shall have the right to prepare the area for occupancy with his own forces and deduct the costs from the Contract Amount. (If Contractor does not respond within 24 hours' notice).
3. If the Contractor fails to staff the job adequately to meet the completion date, the Owner reserves the right to assume possession of the material and complete installation with the Owner's forces or other Contractors or to require the Contractor to work evenings and weekends.
4. In addition to the above-stated requirements for phasing of the work, the Contractors shall not do any noisy work in the areas where examinations will be conducted as per the published school calendar.
5. Work in each work period shall progress at least at a pace in proportion to the Contract time available.
6. The Contractor is responsible for temporary protection of all work until acceptance.
7. The school will be closed on Saturdays, Sundays, regularly schedules district holidays, and at night after cleaning crews have finished.
8. If any contractor wishes to work at any time when the school is normally closed, that Contractor shall arrange and pay for custodial services for the building at the applicable district pay rates.
9. All existing conditions must be verified in the field. The Owner takes no responsibility for actual conditions found deviating from the drawings. If existing condition interferes with contract work, contractor is responsible to eliminate this condition.
10. Contractor must plan, provide and maintain his own access, ramping, and egress as required into and out of the site, staging of trailer(s), materials, machinery, and equipment in agreement with the Construction Manager's Superintendent. Maintain free and safe access on the jobsite for other related project personnel. Maintain safe pedestrian or vehicular traffic must be regulated by a flagman. Trucking and delivery operation should be coordinated with Construction Manager's Superintendent and all other trades.
11. Contractor is responsible for all work shown on Contract Documents, including drawings of other trade disciplines. For example, the HVAC Contractor will be responsible for HVAC work shown on Architectural Drawings.
12. Contractor is responsible to maintain existing site fencing in its existing condition. Modifications to the fence to better accommodate the contract work can be discussed with the Construction Manager. These changes shall then be handled by this contractor at his expense and in accordance with the Construction Manager's Superintendent's direction. Any cost incurred as a result of damages shall be charged to this contractor.
13. Time is of the essence. Contractors' proposed schedule must be approved by the Construction Manager. Contractor shall indicate significant events such as submittals, shop drawings, material ordering, fabrication, delivery, coordination precedents, installation, testing and turnover by area or system as agreed with Construction Manager. A revised progress status shall be required on a weekly basis.
14. Decisions required from the Construction Manager, Architect and/or Engineer, shall be anticipated by the Contractor to provide ample time for inspection, investigation or detailed drawings.
15. Contractor shall limit his operations including storage of materials and prefabrication to areas within the Contract Limit Lines unless otherwise permitted by the Construction Manager at the Owner's option.
16. Contractor shall coordinate the use of premises with the Owner and Construction Manager and shall move at his own expense any stored products under Contractor's control, including excavated material, which interfere with operations of the Owner or separate contractors.
17. Contractor shall obtain and pay for the use of additional storage of work areas needed for operations.

18. Contractor shall assume full responsibility for the protection and safekeeping of products under this Contract stored on the site and shall cooperate with the Construction Manager to insure security for the Owner's Property.
19. The intention of the work is to follow a logical sequence; however, the Contractor may be required by Construction Manager to temporarily omit or leave out any section of his work, or perform his work out of sequence. All such out of sequence work and come back time to these areas shall be performed at no additional cost.
20. Contractor shall submit a three-week schedule (man-loaded by work activity and area) to Construction Manager each week. Contractor's representative shall attend a weekly meeting with all contractors, chaired by Construction Manager, for the purpose of job coordination and sequencing. Contractor is responsible to coordinate the job with other trades and Construction Manager, and to cooperate with other trades in pursuit of the overall project's shop drawings and actively participate in resolving discrepancies, conflicts, interferences, etc.
21. Prime Contractor shall prepare an overall job schedule for his portion of work upon award of Contract, as per Construction Schedules.
22. Sufficient manpower shall be provided at all times to maintain progress of the job. A shortage of labor in the industry shall not be accepted as an excuse for not properly manning the job.
23. The contractor shall take special care in verifying that his equipment matches the characteristics of the power being supplied.
24. Insubordination, unsafe practices, horseplay, abusive behavior or language, wanton destruction of property, use of drugs or alcohol, possession of firearms, and solicitation shall not be tolerated. There will be no warnings, and Contractor shall designate a responsible on-site supervisor to handle any situations that may arise, including termination.
25. Each contractor is responsible to supply and install all wood blocking/bracing necessary to properly secure their work. This responsibility includes coordinating the installation in concealed areas without delaying other trades.
26. Union business shall not be conducted on site. Any Union representatives that visit the site must declare what Contractor's personnel they represent, and must be escorted by that Contractor's Union steward at all times. No visitors, sales representative or non-working personnel shall be permitted on site without prior consent of the Construction Manager. No photographs shall be taken without the Construction Manager's prior approval. The contractor shall insure that it’s work continues uninterrupted during any labor dispute regardless of cause. The contractor shall be liable to the owner for all damages suffered by the disputes or strikes.
27. Organize daily clean ups as well as participating in a weekly joint clean up involving all prime contractors on site. Clean up shall be considered a safety issue. If any contractor fails to keep the site safe and clean within 4 hours of being notified by the construction manager, either verbally or in writing, the construction manager will have the clean up work performed by others and will backcharged accordingly.
28. Contractor shall provide protection from damage to adjacent and adjoining work and/or structures. Contractor shall clean, repair and/or replace any damage for which this contractor is responsible.
29. Contractor shall submit hourly rate sheets that would apply to time and material work for all pertinent trades upon Award of Contract.
30. Contractor shall examine surfaces and conditions prior to start of work. Report unacceptable conditions to the Construction Manager. Do not proceed until unacceptable conditions are corrected and acceptable. Starting of work implies acceptance.
31. Upon removal of exterior walls and window units, the building security and weather protection is the responsibility of the prime contractor performing the removals.
32. It is the responsibilities of all Prime Contractors to review the entire summary of work and remaining documents for additional work items.
33. Each contractor is responsible to review and become familiar with the scope of work included in all Contracts.

34. Limited site space is available in areas as designated by the Construction Manager. Construction trade parking is not permitted in Owner's employee parking lot.
35. Each contractor shall provide the engineering layout required to properly complete his work from an established working point. Contractor shall employ only competent engineering personnel skilled in performing layout tasks of similar complexity.
36. Prior to commencing the work, each Contractor shall provide written acceptance of grades, structures, substrates, and/or systems installed by other Contractors as suitable for installation of his work. Failure to provide this verification prior to commencing work shall constitute acceptance of the existing conditions.
37. Each Contractor shall coordinate with the Construction Manager for lay down areas, staging areas, and overall use of project site.
38. All contractors and their employees, subcontractors and supplier are expressly prohibited from entering the occupied areas of the school buildings during school hours without prior written permission of the Construction Manager and for using any of its facilities (i.e. restrooms, cafeteria, etc.).
39. Each contractor is responsible for the timely provision of the information required by other Contractors for the progress of other Contractors' work.
40. Electrical contractor is required to coordinate / obtain the necessary electrical roughing and final inspections. Provide proper certification paperwork.

END OF SECTION

SECTION 01 2000
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. Procedures for preparation and submittal of applications for progress payments.

B. Procedures for preparation and submittal of application for payments.

1.3 RELATED REQUIREMENTS

A. Article 28 Partial Payments and Article 79 Payments of the General Engineering Agreement for additional requirements.

B. Section 01 5000 - Temporary Facilities and Controls.

C. Section 01 7800 - Closeout Submittals for additional requirements for Final Payment.

D. Section 01 7800 - Closeout Submittals: Additional requirements for project record documents.

1.4 SCHEDULE OF VALUES

A. Form to be used: AIA G702/703 .

B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Fuller and D'Angelo, P.C. for approval.

C. Forms filled out by hand will not be accepted.

D. Submit Schedule of Values in PDF Format within 10 days after date Letter of Intent to Award.

E. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify Bonds and Sub-contractors.

F. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.

G. Revise schedule to list approved Change Orders, with each Application For Payment.

H. Sub-schedules: Where the Work is separated into phases or buildings provide separate payment applications, or provide sub-schedules showing values correlated with each building.

1. For public school projects identify each application with the SED Project number for each building and Fuller and D'Angelo's project number.

I. Provide a separate line item for the following: (where applicable)

1. Bonds. (Bond premium may be paid when invoice of premium is provide).
2. Labor and materials, when payment is anticipated for material not installed.
3. Submittals. (1% Minimum of contract amount).
4. Each allowance.
5. Meeting attendance.
6. As-built Drawings.
7. Punch list.
8. Final Cleaning.
9. Closeout Documents (5% Minimum of contract amount)
10. Authorized change orders.

1.5 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement but not more than one per month.

B. Form to be used: Approved Schedule of Values form.

C. Forms filled out by hand will not be accepted.

D. For each item, provide a column for listing each of the following:
   1. Item Number.
   2. Description of work.
   3. Scheduled Value.
   4. Previous Applications.
   5. Work in Place and Stored Materials under this Application.
   6. Authorized Change Orders.
   7. Total Completed and Stored to Date of Application.
   8. Percentage of Completion.
   9. Balance to Finish.
   10. Retainage.

E. Execute certification by signature of authorized officer.

F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.

G. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.

H. Submit one (1) electronic "pencil copy", in PDF format, of each Application for Payment to YPS Office of Facilities Management and Fuller and D'Angelo, P.C. and district representative for approval.

I. After YPS Office of Facilities Management and Fuller and D'Angelo, P.C.'s approval of the "pencil copy" submit three hard copies of approved Application for Payment to Construction Manager

J. Include the following with each application:
   1. Transmittal letter as specified for submittals in Section 01 3000.
   2. Construction progress schedule, revised and current as specified in Section 01 3216.
   3. Partial Waivers of Mechanic's Lien: With each Application for Payment, submit partial waivers of mechanic's liens from contractor, subcontractors, sub-subcuncontractors, and suppliers for construction period covered by the previous application.
      a. Waiver Forms: Submit waivers of lien on forms, provided by the Architect in Section 01 2005.
   4. When an application shows completion of an item, submit final or full waivers.
   5. Owner reserves the right to designate which entities involved in the Work must submit waivers.
   6. Submit Final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
   7. Certified Payrolls: All Applications for Payment must be accompanied with certified payrolls for all Contract Work performed. **Each contractor and sub-contractor shall submit to the Owner within thirty days after issuance of its first payroll, and every thirty days thereafter**, a transcript of the original payroll record subscribed and affirmed as true under penalties of perjury. The Owners shall be required to receive and maintain such payroll records. The original payrolls or transcripts shall be preserved for three years from the completion of the work on the awarded project.
      a. Submit certification that all personnel listed on certified payrolls have successfully completed an OSHA construction safety and health course of at least 10 hours prior to performing any work on the project.

K. Liens: No Payment will be made when a lien is filed against Owner by contractor or any subcontractor, or supplier or other entities until such lien is removed, bonded or similar action acceptable to the Owner

L. Project record documents as specified in Section 01 7800, shall be available for review by Yonkers Public Schools as a prerequisite for approval of payment.

M. Payment for stored materials (whether on-site but not installed, or stored in secured warehouse) will require a bill of lading showing the exact value. In no case will more than 90% be approved if the item is not installed. Insurance certificates will be provided specific to materials stored (for on-site or offsite items)

N. WhenYPS Office of Facilities Management requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

O. The Owner shall retain Five (5) percent of the amount of each payment.

1.6 INITIAL APPLICATION FOR PAYMENT:

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

1. Executed contract.
2. Approved bonds.
3. Approved insurance certificates.
4. Names of full time project manager, on site superintendent, and foreman.
5. Approved Schedule of Values.
6. Contractor's Construction Schedule (preliminary if not final).
7. Contractor's Submittal Schedule.
8. Emergency Phone Numbers and Contacts.
9. Health and Safety Manual

1.7 APPLICATION FOR PAYMENT AT SUBSTANTIAL COMPLETION

A. Comply with Requirements of Section 01 7800

1.8 MODIFICATION PROCEDURES

A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in its employ, subcontractors whose work is affected by any modifications or changes to the Contract Documents

B. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Owner's Representative will issue instructions directly to the contractor.

C. For other required changes,YPS Office of Facilities Management will issue a document signed by Yonkers Public Schools instructing TBD to proceed with the change, for subsequent inclusion in a Change Order.

1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
2. Promptly execute the change.

D. YPS Office of Facilities Management may issue a document which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change . The Contractor shall prepare and submit a fixed price quotation within ten (10) days.

E. Contractor may propose a change by submitting a request for change to YPS Office of Facilities Management, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 6000.

F. Computation of Change in Contract Amount:
   1. Refer to Article 21 and 22 of General Engineering Agreement.

G. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
   1. For change requested by Fuller and D'Angelo, P.C. for work falling under a fixed price contract, the amount will be based on Contractors 's price quotation.
   2. For change requested by the contractor, the amount will be based on the Contractor 's request for a Change Order as approved by Fuller and D'Angelo, P.C. .
   3. For pre-determined unit prices, unit costs, allowance and quantities, the amount will based on the fixed unit prices, unit costs, allowance.
   4. For change ordered by Fuller and D'Angelo, P.C. without a quotation from , the amount will be determined by Fuller and D'Angelo, P.C. based on the Contractor's substantiation of costs as specified for Time and Material work.

H. Substantiation of Costs: Provide full information required for evaluation.
   1. On request, provide the following data:
      a. Quantities of products, labor, and equipment.
      b. Taxes, insurance, and bonds.
      c. Overhead and profit.
      d. Justification for any change in Contract Time.
      e. Credit for deletions from Contract, similarly documented.
   2. Support each claim for additional costs with additional information:
      a. Origin and date of claim.
      b. Dates and times work was performed, and by whom.
      c. Time records and wage rates paid.
      d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
   3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
      a. If the contractor is directed to perform work on a “Time and Material” basis he will notify the YPS Office of Facilities Management prior to starting and will present an itemized T&M sheet daily for YPS Office of Facilities Management signature at the end of the shift. No payments will be made for any T&M work without daily signed worksheets.

I. Execution of Change Orders: YPS Office of Facilities Management will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

J. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

K. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

L. Promptly enter changes in Project Record Documents.

1.9 APPLICATIONS FOR PAYMENT WHEN BEHIND SCHEDULE

A. When the project falls behind schedule the contractor shall demonstrate the actions to be taken to put the project back on schedule.
   1. Payments will not be approved until satisfactory evidence is presented to put the project on schedule.

1.10 APPLICATION FOR PAYMENT AFTER SCHEDULED COMPLETION DATE

A. In the event the work is not completed by the schedule date, listed in Section 01 1000 - Summary, and in addition to the other remedies described, the Architect will not review progress payment requisitions

submitted after the construction completion date, and the District will not issue any progress payments after that date, until all work is completed.

1. Only one requisition for work performed, after the construction completion date, may be submitted, and it may be submitted only when all work is complete and a Punch List inspection is conducted; said requisition may be submitted when the work at 100% complete, less 5% retainage.

1.11 APPLICATION FOR FINAL PAYMENT

A. Comply with Section 01 7800 - Closeout Submittals.

B. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.

C. Application for Final Payment will not be considered until the following have been accomplished:
   1. All closeout procedures specified in Section 01 7800 - Closeout Submittals are submitted and approved.
   2. All "punch list" items have been completed.

D. It is understood by the Contractor that the maximum payment due the contractor prior to final payment shall be Ninety (95%) of the Contract amount and the final Five (5%) will be due only after the above is satisfied.

END OF SECTION

SECTION 01 2005
PARTIAL RELEASE OF LIEN

CONTRACTOR/SUBCONTRACTOR/VENDOR'S LETTERHEAD

Name of Facility: Group B Schools

Address: TBD

Name of Owner: Yonkers Public Schools

Name of the Contractor/Subcontractor/Vendor: _____

Address: _____

Trade/Vendor:_____

Application # _____ Dated _____.

We certify that we have completed _____% of our Contract.

Prior to this requisition we have received payment equal to _____ % of of our contract amount.

The undersigned, upon receipt of the above requisition payment hereby releases and discharges the Owner of and from any liability or obligation in any way related to or arising out of this project up to and including the date of this document.

The undersigned further covenants and agrees that it shall not in any way claim or file a mechanic's or other lien against the premises of the above designated project, or any part thereof, or against any fund applicable thereto for any of the work, labor, materials heretofore furnished by it in connection with the improvement of said premises.

The undersigned further warrants that, in order to induce the Owner to release this partial payment, they have paid all claims for labor, material, .insurance, taxes, equipment, etc., employed in the prosecution of the work above, to date of this requisition.

The undersigned hereby releases and agrees to hold the Owner harmless from any and all claims in connection with the furnishing of such labor and materials, etc., for the construction of the aforementioned project.

The undersigned further guarantees that all portions of the work furnished .and/or provided by them are in accordance with the contract and that the terms of the contract with respect to these guarantees will hold for the period specified in said contract. Refer to ARTICLE 79 PAYMENTS GENERAL ENGINEERING AGREEMENT for additional requirements.

IN WITNESS WHEREOF, we have executed under seal this release on the above date and to be legally bound hereby:

WITNESS: _____FIRM: _____

BY: _____

_____

State of New York, County of _____ subscribed and sworn to before me this ____ day of _____ 202____

Notary public

My commission expires _____

END OF SECTION

SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. Preconstruction meetings.

B. Progress meetings.

C. Submittals for review, information, and project closeout.

D. Number of copies of submittals.

E. Submittal procedures.

1.3 RELATED REQUIREMENTS

A. General Engineering Agreement.

B. Section 01 3216 - Construction Progress Schedule: Form, content, and administration of schedules.

C. Section 01 3553 - Security Procedures .

D. Section 01 7000 - Execution: Additional coordination requirements.

E. Section 01 7800 - Closeout Submittals:

1.4 PROJECT COORDINATION

A. Project Coordinator: YPS Office of Facilities Management .

B. Coordination: The contractor shall coordinate its construction operations with those of other subcontractors and entities to ensure efficient and orderly installation of each part of the Work. The contractor shall coordinate its operations with operations, included in different Sections that depend on each other for proper installation, connection, and operation

C. Coordinate installation of different components with other contractors and/or subcontractor to ensure maximum accessibility for required maintenance, service, and repair

D. Cooperate with the Project Coordinator in allocation of mobilization areas of site, access, traffic, parking facilities, field offices, and sheds.

E. Comply with Architect's and Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.

F. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities.

G. Make the following types of submittals to Fuller and D'Angelo, P.C.

1. Requests for interpretation.
2. Requests for substitution.
3. Shop drawings, product data, and samples.
4. Test and inspection reports.
5. Design data.
6. Manufacturer's instructions and field reports.
7. Applications for payment and change order requests.
8. Progress schedules.

9. Correction Punch List and Final Correction Punch List for Substantial Completion.
10. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PRECONSTRUCTION MEETING

A. Yonkers Public Schools will schedule a meeting after Notice of Award.

B. Attendance Required:
1. Yonkers Public Schools.
2. Fuller and D'Angelo, P.C. .
3. Contractor and field superintendent.

C. Agenda:
1. Execution of Yonkers Public Schools-TBD Agreement.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
5. Submission of initial Submittal schedule.
6. Designation of personnel representing the parties to Contract Yonkers Public Schools, Contractor and Fuller and D'Angelo, P.C.
7. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
8. Scheduling.
9. Use of premises by TBD.
10. Yonkers Public Schools's requirements and occupancy prior to completion.
11. Construction facilities and controls provided by Yonkers Public Schools.
12. Temporary utilities provided by Yonkers Public Schools.
13. Survey existing facilities prior to staring construction.
14. Security and housekeeping procedures.
15. Procedures for maintaining record documents.

D. Fuller and D'Angelo, P.C. will record minutes and distribute copies within five days after meeting to all participants. Contactor shall distribute to all entities of the Contractor affected by decisions made.

3.2 PROGRESS MEETINGS

A. Fuller and D'Angelo, P.C. will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
1. Meetings will be scheduled throughout progress of the Work at minimum at two week intervals.

B. Attendance Required:
1. TBD.
2. Yonkers Public Schools.
3. Fuller and D'Angelo, P.C. .
4. Consultants.
5. TBD's Superintendent.
6. Major Subcontractor sand suppliers as appropriate to agenda topics for each meeting.

C. Agenda:
1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.

4. Identification of problems that impede, or will impede, planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of delivery schedules.
7. Review construction safety programs.
8. Review exiting and separation of construction
9. Maintenance of progress schedule.
10. Corrective measures to regain projected schedules.
11. Planned progress during succeeding work period.
12. Maintenance of quality and work standards.
13. Effect of proposed changes on progress schedule and coordination.
14. Other business relating to Work.

D. Fuller and D'Angelo, P.C. will record minutes and distribute copies within five after meeting to all participants. Contactor shall distribute to all entities of the Contractor affected by decisions made.

3.3 WEEKLY COORDINATION MEETINGS

A. The Contractor shall schedule and hold weekly general project coordination meetings with the Owner's Representative, to review the work schedule for the week in order to insure the planned work does not conflict with facility operations.

3.4 CONSTRUCTION PROGRESS SCHEDULE - See Section 01 3216

3.5 PROOF OF ORDERS AND DELIVERY DATES

A. Within two (2) weeks after the approval of shop drawings, samples, product data and the like, the Contractor(s) shall provide copies of purchase orders for all equipment and materials which are not readily available in local stock. The Contractor(s) shall submit written statements from suppliers confirming the orders and stating promised delivery dates. Dates shall be indicated and coordinated with the Construction Schedule.

3.6 SUBMITTALS FOR REVIEW

A. All submittals are the product and the property of the Contractor. The Owner, Owner's Representative , or Architect shall not be responsible for the contractor's construction means, methods or techniques: safety precautions or programs; Acts or admissions; or failure to carry out the work in accordance to the contract documents

B. Refer to Article 76 Shop Drawings, Product Data and Samples General Engineering Agreement for additional requirements.

C. Shop Drawing Submittal Log no later than ten (10) days after award of contract.

D. Shop Drawing Submittals shall be submitted no later than twenty (20) days after Letter of Award of Contract. No further payments will be made to the contractor after twenty (20) until all major submittals are made.

E. When the following are specified in individual sections, including but not limited to the following, submit them for review:
   1. Product data.
   2. Shop drawings.
   3. Samples for selection.
   4. Templates.

F. Submit to Fuller and D'Angelo, P.C. for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
   1. Submittals for roofing or others requiring consultant review submit directly to consultant with copy to Architect

G. Samples will be reviewed only for aesthetic, color, or finish selection and for record documents purposes described in Section 01 7800 - Closeout Procedures.

H. After review, provide copies and distribute in accordance with Submittal Procedures article below .

I. The Architect shall review and approve or take other appropriate action on the Contractor submittals, such as shop drawings, product data, samples and other data, which the Contractor is required to submit, but only for the limited purpose of checking for conformance with the design concept and the information shown in the Construction Documents. This review shall not include review of the accuracy or completeness of details, such as quantities, dimensions, weights or gauges, fabrication processes, construction means or methods, coordination of the work with other trades or construction safety precautions, all of which are the sole responsibility of the Contractor. The Architect's review shall be conducted with reasonable promptness while allowing sufficient time in the Architect's judgment to permit adequate review. Review of a specific item shall not indicate that the Architect has reviewed the entire assembly of which the item is a component. **The Architect shall not be responsible for any deviations from the Construction Documents not brought to the attention of the Architect, in writing, by the Contractor.** The Architect shall not be required to review partial submissions or those for which submissions of correlated items have not been received.

J. Marking or comments on shop drawings shall not be construed as relieving the Contractor from compliance with the contract project plans and specifications, nor departure therefrom. The contractor remains responsible for details and accuracy for conforming and correlating all quantities, verifying all dimensions, for selecting fabrication processes, for techniques of assembly and for performing their work satisfactorily and in a safe manner.

K. **Architect will review the original submittal and one (1) re submittal. Additional reviews will be additional services provided to the Owner and charged accordingly. The Owner will back charge the contractor accordingly.**

L. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

M. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

3.7 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
   1. Design data.
   2. Certificates.
   3. Inspection reports.
   4. Manufacturer's instructions.
   5. Manufacturer's field reports.
   6. Other types indicated.

B. Submit for Fuller and D'Angelo, P.C. 's knowledge as contract administrator for Yonkers Public Schools. No action will be taken.

3.8 SUBMITTALS FOR PROJECT CLOSEOUT

A. Refer to Section 01 7800 - Closeout Submittals and General Engineering Agreement..

3.9 NUMBER OF COPIES OF SUBMITTALS

A. Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected. All submittals shall be in electronic format and conforming to the following:
   1. Each item shall be in a separate file.
   2. Each file name shall start with the specification section number and contain an abbreviated explanation of what it contains; for example:
      a. 03 3000 Concrete; 07 5323 EPDM.pdf; 07 5323 Bond Adh.pdf ; 07 7100 Drain.pdf; 07 7100 Hatch.pdf; 09900 Painting;

3. Add Revision number (Rev2 Rev3, etc) to the file name when resubmitting items, for example:
   a. 07 5323 EPDM Revl.pdf 07 5323 Bond AdhRevl.pdf
4. Use capital letters and spaces to make the names "readable" do not use special characters, underscores, hyphens, etc.
5. Keep the file names short, no more than 25 characters.
6. Provide a transmittal with each electronic submittal and list each item that's included.
7. Provide a Cover Sheet with each item - in the same file as the technical submittal.
8. Do not add dates to the file names, the files are automatically dated when created..
9. Do not zip the files, and do not put the files in Folders.
10. Do not email electronic submittal attachments larger than 5 MB.
11. Do not email multiple electronic submittals- rather bum the submittals on a CD and send the CD via FedEx or other overnight mail.
12. Make all technical submittals at one time per trade- refer to the specification for additional submittal requirements for example:
    a. Concrete; Masonry; Miscellaneous Fabrications; Roofing; etc.
13. Do not send MSDS with the technical submittals; collate all of the MSDS needed for the entire project in three ring binders, organized by specification section, and submit the binders to the Owner, with copy of Transmittal to the Architect, and maintain one copy at the project site.

B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Fuller and D'Angelo, P.C. .
   1. After review, produce duplicates.
   2. Approved sample will be retained at the project site.
   3. Retained samples will not be returned to TBD unless specifically so stated.
   4. Submit with each sample, in electronic PDF, data, cuts, photos, color, charts, etc.

3.10 SUBMITTAL PROCEDURES

A. Shop Drawing Procedures:
   1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the Contract Documents and coordinating related Work.
   2. Do not reproduce the Contract Documents to create shop drawings.
   3. Generic, non-project specific information submitted as shop drawings do not meet the requirements for shop drawings.

B. Transmit each submittal with a copy of approved submittal form attached to this section .

C. Identify Project, TBD, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.

D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
   1. Contractor's submittal of shop drawings certifies that the contractor has reviewed and coordinated this shop drawing and they are in conformance to the plans, specifications, applicable codes and other provisions of the Contract Documents.

E. All submitted shop drawings shall be stamped and signed by the Contractor with the following note:
   1. "We the undersigned certify that we have reviewed and coordinated this shop drawing and they are in conformance to the plans, specifications, applicable codes and other provisions of the Contract Documents."

F. Deliver submittals to Fuller and D'Angelo e-mail address and/or Consultants when directed.

G. Schedule submittals to expedite the Project, and coordinate submission of related items.

H. For each submittal for review, allow 10 days excluding delivery time to and from the TBD.

I. Resubmittals: Contractor shall resubmit within 5 working days after receiving submittal.

J. Allow 5 working days for processing each re submittal.

K. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.

L. Provide space for Fuller and D'Angelo, P.C. and Consultants review stamps.

M. When revised for resubmission, identify all changes made since previous submission.

N. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

O. Submittals not requested will not be recognized or processed.

3.11 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. General: Except for submittals for the record and similar purposes, where action and return on submittals is required or requested, the Architect/Engineer will review each submittal, mark with appropriate "Action".

C. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

D. Final Unrestricted Release: Where the submittals are marked as follows, the work covered by the submittal may proceed provided it complies with the requirements of the contract documents; acceptance of the work will depend upon that compliance.

1. Marking: "No Exceptions Taken"

E. Final-But-Restricted Release: When the submittals are marked as follows, the work covered by the submittal may proceed provided it complies with both the Architect's/Engineer's notations or corrections on the submittal and with the requirements of the contract documents; acceptance of the work will depend on that compliance.

1. Markings: "Make Correction Noted"

F. Returned for Re-submittal: When the submittal is marked as follows, do not proceed with the work covered by the submittal, including purchasing fabrication, delivery or other activity. Revise the submittal or prepare a new submittal in accordance with the Architect's/Engineer's notations stating the reasons for returning the submittal; resubmit the submittal without delay. Repeat if necessary to obtain a different action marking. Do not permit submittals with the following marking to be used at the project site, or elsewhere where work is in progress.

1. Marking: "Revise and Resubmit"

G. Marking: "Rejected".

H. Other Action: Where the submittal is returned, marked with the Architect/Engineer's explanation, for special processing or other Contractor activity, or is primarily for information or record purposes, the submittal will not be marked.

SUBMITTAL COVERSHEET

Yonkers Public Schools

Multiple Schools Building Envelope Renovation

Group B Schools

ARCHITECT:
Fuller and D'Angelo, P.C.
45 Knollwood Rd.
Elmsford, NY10523

OWNER:
Yonkers Public Schools
1 Larkin Center
Yonkers, NY 10701

CONTRACTOR: _____ CONTRACT: _____

ADDRESS: _____

TELEPHONE: _____FAX: _____EMAIL: _____

Facility Name: Group B Schools

Type of Submittal: Re-submittal: [ ] No [ ] Yes

[ ] Shop Drawings [ ] Product Data [ ] Schedule [ ] Sample

[ ] Test Report [ ] Certificate [ ] Color Sample [ ] Warranty

SUBMITTAL DESCRIPTION: _____

PRODUCT NAME: _____

MANUFACTURER: _____

SUBCONTRACTOR/_____

SUPPLIER: _____

SPEC. SECTION NO.: _____ DRAWING NO(S): _____

PARAGRAPH: _____ RM. OR DETAIL NO(S): _____

CONTRACTOR'S REVIEW STAMP

Contractor Review Statement: These documents have been checked for accuracy and coordinated with job conditions and Contract requirements by this office and have been found to comply with the provisions of the Contract documents.

Remarks:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

NAME: _____ DATE: _____

END OF SECTION

SECTION 01 3216
CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. Preliminary schedule.

B. Construction progress schedule, bar chart type.

1.3 RELATED SECTIONS

A. Section 01 1000 - Summary of Contract: Work sequence.

B. Section 01 3000 - Administrative Requirements

1.4 REFERENCE STANDARDS

A. Article 5 General Engineering Agreement for additional requirements.

B. AGC (CPSM) - Construction Planning and Scheduling Manual; 2004.

1.5 RESPONSIBILITY

A. The Contractor shall develop a full schedule, in sufficient detail and clarity of form and technique so that the contractor can plan and control his work properly and the Owner's Representative and Architect can readily monitor and follow the progress for all portions of the work. The Contractor shall complete the detailed schedule within 10 days after contract award
   1. Identify all long lead items and dates required on site.
   2. In the event of conflict Owner's Representative and Architect shall resolve a provide direction which is in the best interest on the District.

B. The activities identified in the schedule shall be analyzed in detail to determine activity time durations in units of whole working days. All duration's shall be the result of definitive manpower and resource planning by the Contractor.

C. The activity data shall include activity codes to facilitate selection, sorting and preparation of summary reports and graphics. Activity codes shall be developed for:
   1. Area: Subdivision of the building(s) and site(s) into logical modules or blocks and levels. Pods A, B, C and D.
   2. Responsibility: Contractor or subcontractor responsible for the work.
   3. Specifications: 16 Division CSI format.
   4. System: Division of the work into building systems for summary purposes.
   5. Milestone: Work associated with completion of interim completion dates or milestones
   6. Pay Item: Work identified with a pay item on the Schedule of Values.

1.6 SUBMITTALS

A. Within fifteen (15) days after date Notice of Award, submit preliminary schedule .

B. If preliminary schedule requires revision after review, submit revised schedule within 5 days.

C. Within 5 days after review of preliminary schedule, submit draft of proposed complete schedule for review.

D. Within 10 days after joint review, submit complete schedule.

E. Submit updated schedule with each Application for Payment.

F. Submit under transmittal letter form specified in Section 01 3000 - Administrative Requirements.

G. The contractor(s) are hereby notified that payment requisitions will not be processed by the Architect and Owner's Representative nor paid by the Owner until all schedules are reviewed and approved by each prime contractor and the Architect or Owner's Representative.

1.7 QUALITY ASSURANCE

A. Scheduler: Contractor 's personnel or specialist Consultant specializing in construction scheduling with one years minimum experience in scheduling construction work of a complexity comparable to this Project, and having use of computer facilities capable of delivering a detailed graphic printout within 48 hours of request.

B. Contractor's Administrative Personnel: 3 years minimum experience in using and monitoring Bar Chart schedules on comparable projects.

1.8 SCHEDULE FORMAT

A. Listings: In chronological order according to the start date for each building and each activity. Identify each activity with the applicable specification section number.

B. Submit schedule in electronic PDF format.

C. Scale and Spacing: To allow for notations and revisions.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PRELIMINARY SCHEDULE

A. Prepare preliminary schedule in the form of a horizontal bar chart.

B. Based on the preliminary development of the progress schedule and on feedback from Owner, Owner's Representative, and Architect or whatever updating may have occurred during the project start-up, the Contractor shall, for the entire work of the contract, prepare the (Master Schedule), secure critical time commitments for performing major elements of all the work.

3.2 GENERAL CONTENT.

A. The contractor shall prepare a schedule for their work.

B. Milestones: Include milestones in schedule, including, but not limited to, Notice of Award, Submittals, Verification of existing conditions, Removals, Installation, Substaintial Completion, Completion of Punch List, Final Completion, and Closeout

C. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.

D. Identify each item by specification section number.

E. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.

F. Provide legend for symbols and abbreviations used.

3.3 BAR CHARTS

A. Include a separate bar for each major portion of Work or operation.

B. Identify the first work day of each week.

3.4 REVIEW AND EVALUATION OF SCHEDULE

A. Participate in joint review and evaluation of schedule with Owner's Representative at each submittal.

B. Evaluate project status to determine work behind schedule and work ahead of schedule.

C. After review, revise as necessary as result of review, and resubmit within 5 days.

1. When project work is behind schedule indicate revisions required to put the project on schedule.

2. Payments will not approved until satisfactory evidence is presented to put the project on schedule.

3.5 UPDATING SCHEDULE

A. Maintain schedules to record actual start and finish dates of completed activities.

B. Indicate progress of each activity to date of revision, with projected completion date of each activity.

C. Update diagrams to graphically depict current status of Work.

D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.

E. Indicate changes required to maintain Date of Substantial Completion.

F. Submit reports required to support recommended changes.

3.6 DISTRIBUTION OF SCHEDULE

A. Distribute copies of updated schedules to Owner's Representative , Fuller and D'Angelo, P.C., Contractor's site files, subcontractors, and major suppliersand other concerned parties.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

END OF SECTION

SECTION 01 3307
SED SPECIAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SUMMARY

A. This Section specifies special requirements of State Education Department, including Commissioner's Regulation Part 155.5, 155.7

1. Copies of Commissioner's Regulation Part 155.5, 155.7 are available on the State Education Department's web site.www.p12nysed.gov

1.3 CERTIFICATE OF OCCUPANCY

A. **The occupied portion of any school building shall always comply with the minimum requirements necessary to maintain a Certificate of Occupancy.**

1.4 GENERAL SAFETY AND SECURITY DURING CONSTRUCTION

A. All construction materials shall be stored in a safe and secure manner.

B. Fences around construction supplies or debris shall be maintained.

C. Gates shall always be locked unless a worker is in attendance, to prevent unauthorized entry.

D. During exterior renovation work, overhead protection shall be provided for any sidewalks or areas immediately beneath the work site or such areas shall be fenced off and provided with warning signs to prevent entry.

E. Workers shall be required to wear photo-identification badges at all times for identification and security purposes while working at occupied sites.

1.5 SEPARATION OF CONSTRUCTION

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

1. A specific stairwell and/or elevator may be assigned for construction worker use during work hours, when approved by the Owner. Workers may not use corridors, stairs or elevators designated for students or school staff.
2. Large amounts of debris must be removed by using enclosed chutes or a similar sealed system. There shall be no movement of debris through halls of occupied spaces of the building. No material shall be dropped or thrown outside the walls of the building.
3. All occupied parts of the building affected by renovation activity shall be cleaned at the close of each work day. School buildings occupied during a construction project shall maintain required health, safety and educational capabilities at all times that classes are in session.
4. A plan detailing how exiting required by the applicable building code will be maintained.
5. A plan detailing how adequate ventilation will be maintained during construction.

1.6 FIRE PREVENTION

A. There is no smoking on school property for fire prevention and conformancce to New York State Law.

B. Any holes in floors or walls shall be sealed with a fire resistant material.

C. Contractor shall maintain existing fire extinguishers.

D. Fire alarm and smoke detection systems shall remain in operation at all times.

1.7 CONSTRUCTION DIRECTIVES

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

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

C. Off-Gassing Control. The Contractor shall be responsible to ensure that activities and materials which result in "off-gassing" of volatile organic compounds such as glues, paints, furniture, carpeting, wall covering, drapery, etc., are scheduled, cured or ventilated in accordance with manufacturer's recommendations before a space can be occupied.

1.8 ASBESTOS

A. Asbestos/Lead Test Asbestos Letter. Indication that all school areas to be disturbed during renovation or demolition have been or will be tested for lead and asbestos.

B. Asbestos Code Rule 56. Large and small asbestos abatement projects as defined by 8 NYCRR 155.5(k) shall not be performed while the building is occupied. Note: It is SED's interpretation that the term "building" as referenced in this section, means a wing or major section of a building that can be completely isolated from the rest of the building with sealed non combustible construction. The isolated portions (the occupied portion and the portion under construction) of the building must contain separate code compliant exits. The ventilation systems must be physically separated and sealed at the isolation barrier(s).

1. Asbestos TEM. The asbestos abatement area shall be completely sealed off from the rest of the building and completely cleaned and tested by TEM prior to re-entry by the public.
2. Lead Abatement Projects. A project that contains materials identified to be disturbed which tests positive for lead shall include that information in the Construction Documents. The Construction Documents must address the availability of lead testing data for the building and include a statement that the OSHA regulations be followed and that cleanup and testing be done by HUD protocol.

1.9 VENTILATION

A. The work, as scheduled in the existing building, is to be performed when the facility is unoccupied. In the event that work is required to be performed during times when the building is occupied, all existing ventilation system between areas of work and areas of occupancy shall be disconnected, separated and code complying ventilation requirements be provided the occupied area. Prior to such work commencing the contractor shall submit a plan, for review indicating procedure to be taken. Also see paragraph 1.5 above for additional requirements."

1.10 ELECTRICAL CERTIFICATION:

A. The electrical subcontractor shall obtain UL Certification or Inspection from a Certified Electrical Organization for electrical installation.

1.11 EXITING

A. Exiting: Work will be performed when school is not in session or after school hours. All exiting will be clear and usable at all times.

B. All exits shall be clear and usable at all times.

C. All modifications or changes to the exiting plan shall be approved by the Architect.

1.12 CONSTRUCTION WORKERS IN OCCUPIED AREAS

A. No worker shall be permitted in areas occupied by students. If access is required by the contractor's personnel they will be supervised by District personnel. Contractor shall provided 24 hour notice to the Owner when such access will be required.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 3553
SITE SAFETY AND SECURITY PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. The safety requirements, which must be followed by the Contractor during the execution of this contract.

B. The Contractor agrees that the work will be completed with the greatest degree of safety and:

1. To conform to the requirements of the Occupational Safety and Health Act (OSHA) and the Construction Safety Act including all standards and regulations that have been or shall be promulgated by the governmental authorities which administer such acts, and shall hold the Owner, Owner's Representative, the Architect, and all their employees, consultants and representatives harmless from and against and shall indemnify each and everyone of them for any and all claims, actions, liabilities, costs and expenses, including attorneys fees, which any of them may incur as a result of non-compliance.

C. Security measures including entry control, personnel identification, and miscellaneous restrictions.

1.3 REFERENCES:

A. Code of Federal Regulations OSHA Safety and Health.

1.4 RELATED REQUIREMENTS

A. Articles 68 and 73 of General Engineering Agreement for additional requirements.

B. Section 01 1000 - Summary of Contract: use of premises and occupancy .

C. Section 01 5000 - Temporary Facilities and Controls01 5000: _____.

1.5 DEFINITIONS

A. Public shall mean anyone not involved with or employed by the contractor to perform the duties of this contract.

B. Site shall mean the limits of the work area.

C. Contractor shall mean the contractor, his/her subcontractors and any other person related to the contract execution.

1.6 SECURITY PROGRAM

A. Security and Protection Facilities and Services shall be the responsibility of the the Contractor and all costs shall be included in their bid.

B. Protect Work, existing premises and Yonkers Public Schools's operations from theft, vandalism, and unauthorized entry.

C. Coordinate with Yonkers Public Schools's security program.

D. Initiate program in coordination with Yonkers Public Schools's existing security system at project mobilization.

E. Maintain program throughout construction period until directed by YPS Office of Facilities Management .

1.7 ENTRY CONTROL

A. The existing building contains a security alarm system maintained and operated by the Owner. Access into the existing building shall not be permitted unless the owner is notified and arrangements made to deactivate the system

B. Restrict entrance of persons and vehicles into Project site and existing facilities.

C. Allow entrance only to authorized persons with proper identification.

D. Yonkers Public Schools will control entrance of persons and vehicles related to Yonkers Public Schools's operations.

E. Coordinate access of Yonkers Public Schools's personnel to site in coordination with YPS Office of Facilities Management and Yonkers Public Schools and security forces.

F. Traffic Control
   1. Contractor shall maintain access for emergency vehicles, fireman and pedestrians and protect from damage all persons and property within the limits of and for the duration of the contract;
   2. Conduct construction operations so that the traveling public and pedestrian safety is subjected to a minimum of hazard and delay.
   3. Contractor shall perform the following minimum requirements as directed by Owner's Represetative.
      a. Keep the surface of the traveled way free from mounds, depressions, and obstructions of any type which could present hazards or annoyance to traffic.
      b. Keep the surface of all pavements used by the public free and clean of all debris, masonry, stucco, and concrete or other obstructions to provide safe traveled ways.
      c. Control dust and keep the traveled way free from materials spilled from hauling and construction equipment.
      d. Provide all cones, barricades, signs and warning devices as may be required and/or as ordered by YPS Office of Facilities Management to safely carry out the foregoing. All such signs and devices shall be fabricated and placed in accordance with the latest “Federal Manual on Uniform Control Devices”. Use of Open Flares Is Prohibited.
   4. Ingress and Egress
      a. Contractor shall provide and maintain at all times safe and adequate ingress and egress to and from site at existing or at new access points consistent with work, unless otherwise authorized by the Owner's Representative.
   5. If, upon notification by Owner's Representative, and the contractor fails to correct any unsatisfactory condition within 24 hours of being so directed, Owner's Representative will immediately proceed with adequate forces to properly maintain the project and the entire cost of such maintenance shall be deducted (back charged) from any moneys due the contractor
   6. All traffic control costs shall include the base bid of furnishing all labor, material and equipment including the cost of any and all incidental required by job conditions as ordered by Yonkers Public Schools

1.8 FIRE PREVENTION AND CONTROL

A. The Contractor shall provide Fire Extinguishers as follows: Provide type "A" fire extinguishers for temporary offices and similar spaces where there is minimal danger of electrical fires or grease-oil-flammable liquid fires. In other locations provide either type "ABC" dry chemical extinguishers, or a combination of several extinguishers of NFPA recommended types for the exposures in each case.
   1. All required exits, fire alarm, security, automatic temperature control, PA, sprinkler and similar systems shall be maintained and operable throughout the entire construction contract.
      a. Contractor(s) will be back-charged for all fines imposed for false alarms or service calls.

B. Free access to fire hydrants and standpipe connections shall be maintained at all times during construction operations. Portable fire extinguishers shall be provided by the the Contractor and made conveniently available throughout the construction site. Contractor(s) shall notify their employees of the location of the nearest fire alarm box at all locations where work is in progress.

C. The Contractor shall take all possible precautions for the prevention of fires. Where flame cutting torches, blow torches, or welding tools are required to be used within the building, their use shall be as approved by the Construction Manager at the site. When welding tools or torches of any type are in use, have available in the immediate vicinity of the work a fire extinguisher of the dry chemical 20 lbs. Type. The fire extinguisher(s) shall be provided and maintained by the Contractor doing such work.

D. Fuel for cutting and heating torches shall be gas only and shall be contained in Underwriters laboratory approved containers.

E. Storage of gas shall be in locations as approved by the Owner and subject to Fire Department regulations and requirements.

F. No volatile liquids shall be used for cleaning agents or as fuels for motorized equipment or tools within a building except with the express approval of the Owner and/or Architect and in accordance with local codes. On-site bulk storage of volatile liquids shall be outside the buildings at locations directed by the Owner, who shall determine the extent of volatile liquid allowed within the building at any given time.

1.9 PERSONNEL IDENTIFICATION

A. Provide identification badge or other approved identification to each person authorized to enter premises.
   1. Badge To Include: Personal photograph, name and employer.

B. Maintain a list of accredited persons, submit copy to Yonkers Public Schools on request.

1.10 RESTRICTIONS

A. Do not allow cameras on site or photographs taken except by written approval of Yonkers Public Schools.

PART 2 PRODUCTS -

2.1 MATERIALS

A. Refer to Section 01 5000 - Temporary Facilities and Controls for additional barrier requirements.

B. Signs shall be made of sturdy plywood of 1/2" minimum thickness and shall be made to legible at a distance of 50 feet.

PART 3 EXECUTION

3.1 GENERAL

A. In the performance of its contract, the Contractor shall exercise every precaution to prevent injury to workers and the public or damage to property.
   1. The Contractor shall, at their own expense, provide temporary structures, place watchmen, design and erect barricades, fences and railings, give warnings, display such lights, signals and signs, exercise such precautions against fire, adopt and enforce such rules and regulations, and take such other precautions as may be necessary, desirable or proper or as may be directed.
   2. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work to be done under this contract. The Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss including but not limited to:
      a. All employees working in connection with this contract, and other persons who may be affected thereby.
      b. All the work materials and equipment to be incorporated therein whether in storage on or off site; and including trees, shrubs, lawns, walks, pavements, facilities not designated for removal, relocation or replacement in the course of construction.

B. The Contractor's duties and responsibilities for the safety and protection of the work: shall continue until such time as all the work is completed and contractor has removed all workers, material and equipment from the site, or the issuance of the certificate of final completion, whichever shall occur last.

C. The Contractor shall use only machinery and equipment adapted to operate with the least possible noise, and shall so conduct his operations that annoyance to occupants of the site and nearby homes and facilities shall be reduced to a minimum

D. It shall be the responsibility of the Contractor to insure that all employees of the contractor and all subcontractors, and any other persons associated with the performance of their contract shall comply with the provisions of this specification.

E. The Contractor shall clean up the site daily and keep the site free of debris, refuse, rubbish, and scrap materials. The site shall be kept in a neat and orderly fashion. Before the termination of the contract. The Contractor shall remove all surplus materials, falsework, temporary fences, temporary structures, including foundations thereof.

F. The Contractor shall follow all rules and regulations put forth in the Code of Federal Regulations (OSHA Safety and Health Standards).

END OF SECTION

SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. Submittals.

B. References and standards.

C. Control of installation.

D. Mock-ups.

E. Tolerances.

F. Manufacturers' field services.

G. Defect Assessment.

1.3 RELATED REQUIREMENTS

A. Artical 12 General Engineering Agreement for additional requirements.

B. Section 01 3000 - Administrative Requirements: Submittal procedures.

C. Section 01 6000 - Product Requirements: Requirements for material and product quality.

1.4 REFERENCE STANDARDS

A. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2015a, with Editorial Revision (2016).

B. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2015.

1.5 DEFINITIONS:

A. Refer to Article 7 and Article 47 of the General Engineering Aggreement.

1.6 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Design Data: Submit for Owner's Representative and Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Yonkers Public Schools's information.

C. Test Reports: After each test/inspection, promptly submit two copies of report to Fuller and D'Angelo, P.C. and to Owner's Representative.

1. Include:
    a. Date issued.
    b. Project title and number.
    c. Name of inspector.
    d. Date and time of sampling or inspection.
    e. Identification of product and specifications section.
    f. Location in the Project.
    g. Type of test/inspection.
    h. Date of test/inspection.
    i. Results of test/inspection.

j. Compliance with Contract Documents.

k. When requested by Fuller and D'Angelo, P.C. , provide interpretation of results.

2. Test report submittals are for Owner's Representative and Architect 's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Yonkers Public Schools's information.

D. Certificates: When specified in individual specification sections, submit certification by the manufacturer and TBD or installation/application subcontractor to Fuller and D'Angelo, P.C. in quantities specified for Product Data.

1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

2. Certificates may be recent or previous test results on material or product, but must be acceptable to Fuller and D'Angelo, P.C. .

E. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, for the Yonkers Public Schools's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

F. Manufacturer's Field Reports: Submit reports for Fuller and D'Angelo, P.C. 's benefit as contract administrator or for Yonkers Public Schools.

1. Submit report in duplicate within 30 days of observation to Fuller and D'Angelo, P.C. for information.

2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.

1.7 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from Fuller and D'Angelo, P.C. before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Fuller and D'Angelo, P.C. shall be altered from Contract Documents by mention or inference otherwise in any reference document.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Fuller and D'Angelo, P.C. before proceeding.

D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.2 MOCK-UPS

A. Accepted mock-ups establish the standard of quality the Fuller and D'Angelo, P.C. and Fuller and D'Angelo, P.C. will be the sole judge the Work.

B. Integrated Exterior Mock-ups: construct integrated exterior mock-up as directed. Coordinate installation of exterior envelope materials and products as required in individual Specification Sections. Provide adequate supporting structure for mock-up materials as necessary.

C. Notify Owner's Representative and Architect seven (7) working days in advance of dates and times when mock-ups will be constructed.

D. Provide supervisory personnel who will oversee mock-up construction. Provide workers that will be employed during the construction at Project.

E. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.

F. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

G. Accepted mock-ups shall be a comparison standard for the remaining Work.

H. Where mock-up has been accepted by Fuller and D'Angelo, P.C. and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Fuller and D'Angelo, P.C. .

3.3 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Fuller and D'Angelo, P.C. before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

3.4 CONTRACTOR'S TESTING AND INSPECTION

A. Testing and Inspections shall be conducted by a qualified testing agency or special inspector as required by authorities having jurisdiction and as indicated in individual Specification Sections as the contractor's responsibility including:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Owner's Representative, Architect , and Contractor promptly of irregularities and deficiencies observed in the work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Owner's Representative, and Architect with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and re-inspecting corrected work.
7. All design mixes.
8. Electrical Certification: The contractor shall obtain UL Certification or Inspection from a Certified Electrical Organization for electrical installation.

9. Testing as required by individual specification sections.

3.5 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, concrete repairs and traffic coatings as applicable, and to initiate instructions when necessary.

B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.6 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not complying with specified requirements.

B. If, in the opinion of Fuller and D'Angelo, P.C. , it is not practical to remove and replace the work, Fuller and D'Angelo, P.C. will direct an appropriate remedy or adjust payment.

END OF SECTION

SECTION 01 4100
REGULATORY REQUIREMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SUMMARY of Reference Standards

A. The Owner shall file and obtain the Building Permit.

B. Regulatory requirements applicable to this project are the following:

C. 29 CFR 1910 - Occupational Safety and Health Standards; current edition.

D. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

E. New York State Uniform Fire and Building Codes known as the “Building Codes of the State of New York” and consist of the following:

1. Building Code of New York State
2. State Education Department Planning Standards, including Commissioner's Regulation Part 155.5, 155.7
3. Energy Conservation Construction Code of New York State
4. Fire Code of New York State
5. Fuel Gas Code of New York State
6. Mechanical Code of New York State
7. Plumbing Code of New York State
8. Utility Company Regulations and Requirements.
9. Classification of Construction: Type I.
10. Occupancy Classification:Education E
11. State Education Department: Planning Standards is applicable to the work. Any conflicts between the Building Codes of New York and the State Education Department Planning Standards, the most restrictive shall apply. Copies of the Planning standards are available at the SED web site.

F. Electrical Certification: The Electrical sub-contractor shall obtain UL Certification or Inspection from a Certified Electrical Organization for certification of electrical installations.

G. The Contractor shall furnish and pay for all other permits, fees and other installation costs required for the various installations by governing authorities and utility companies; prepare and file drawings and diagrams required; arrange for inspections of any and all parts of the work required by the authorities and furnish all certificates necessary to the Owner's Representative and Architect as evidence that the work installed under this Section of the Specifications conforms with all applicable requirements of the State Codes and Municipal

H. Any items of work specified herein and shown on the drawings which conflict with aforementioned rules, regulations and requirements, shall be referred to the Owner's Representative and Architect for decision, which decision shall be final and binding.

I. The work shall not be deemed to have reached a state of completion until the certificates have been delivered

J. EPA - Environmental Protection Agency.

K. OSHA Part 1926 Safety and Health Regulations for Construction.

L. Federal Regulation for Asbestos Abatement

1. Title 30 CFR Part 61, Subpart G; The Transport and Disposal of Asbestos Waste
2. The Transport and Disposal of Asbestos Waste]
3. Title 40 CFR, Part 763 Asbestos Containing Materials in Schools; Final Rule and Notice
4. Title 49 CFR Parts 106, 107, and 171-179.The Transportation Safety Act of 1974 and the Hazardous Material Transportation Act..
5. Public Law 101-637 ASHARA

M. New York State Official Compilation of Codes, Rules and Regulations
1. Title 12 Part 56
2. Title 10 Part 73
3. Title 6 Parts 360-364
4. Labor Law - Article 30 and Sections 900-912
5. All applicable Additions, Addenda, Variances and Regulatory Interpretation Memoranda

1.3 MANDATORY OSHA CONSTRUCTION SAFETY AND HEALTH TRAINING

A. Pursuant to NYS Labor Law §220-h - All laborers, workers and mechanics working on the site are required to be certified as having successfully completed an OSHA construction safety and health course of at least 10 hours prior to performing any work on the project.

B. All contractors and their subcontractor's project superintendent, employees, directly or indirectly employed by the contractor to work on the project must at all times, whenever on the school property, wear an ID badge, safety vest, hard hat, etc. and all other required personal protective equipment as required by OSHA

1.4 RELATED REQUIREMENTS

A. Section 01 4000 - Quality Requirements.

B. Section 01 4219 - Reference Standards

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. Temporary electric power and light.

B. Temporary sanitary facilities.

C. Temporary Controls: Barriers, enclosures, and fencing.

D. Security requirements.

E. Vehicular access and parking.

F. Waste removal facilities and services.

G. Construction aids and miscellaneous services and facilities.

1.3 RELATED REQUIREMENTS

A. Section 01 3000 - Administrative Requirements for submittals.

B. Section 01 7000 - Execution progress cleaning.

1.4 REFERENCES

A. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Refer to guidelines for Bid Conditions for “Temporary Job Utilities and Services” as prepared jointly by AGC and ASC for recommendations.

1.5 QUALITY ASSURANCE

A. Regulations: The contractor shall comply with industry standards and with applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:
   1. Building code requirements.
   2. Health and safety regulations.
   3. Utility company regulations.
   4. Police, fire department and rescue squad rules.
   5. Environmental protection regulations

B. Standards: The contractor shall comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."

1.6 PROJECT CONDITIONS

A. General: Each contractor shall provide each temporary service and facility ready for use at each location, when first needed to avoid delays in performance of work. Maintain, expand as required, and modify as needed throughout the progress of the work. Do not remove until services or facilities are no longer needed, or are replaced by the authorized use of completed permanent facilities.

B. Temporary Use of Permanent Facilities: Regardless of previously assigned responsibilities for temporary services and facilities, the Installer of each permanent service or facility shall assume responsibility for its operation, maintenance and protection during use as a construction service or facility prior to the Owner's acceptance and operation of the facility.

C. Conditions of Use: Operate temporary services and facilities in a safe and efficient manner. Do not overload, and do not permit temporary services and facilities to interfere with the progress of work, or occupancy of existing facility by owner. Do not allow unsanitary conditions, public nuisances or hazardous conditions to develop or persist on the site.

D. Temporary Construction and Support Facilities: Maintain temporary facilities in a manner to prevent discomfort to users. Take necessary fire prevention measures. Maintain temporary facilities in a sanitary manner so as to avoid health problems.

E. Security and Protection: Maintain site security and protection facilities in a safe, lawful, publicly acceptable manner. Take measures necessary to prevent site erosion.

1.7 TEMPORARY UTILITIES

A. Yonkers Public Schools will provide the following:
   1. Electrical power , consisting of connection to existing facilities.
   2. Water supply, consisting of connection to existing facilities.

B. Use trigger-operated nozzles, with back flow devices, for water hoses, to avoid waste of water.

1.8 DIVISION OF RESPONSIBILITIES

A. Each contractor is responsible for the following:
   1. Installation, operation, maintenance, and removal of each temporary facility usually considered as its own normal construction activity, as well as the costs and use charges associated with each facility.
   2. Plug-in electric power cords and extension cords.
   3. Supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
   4. Special power requirements for installation of its own work such as welding.
   5. Its own field office complete with necessary furniture, utilities, and telephone service.
   6. Its own storage and fabrication sheds.
   7. All hoisting and scaffolding for its own work.
   8. Collection of general waste and debris and disposing into containers provided by the General Construction.Contract at each building
   9. Secure lockup of its own tools, materials and equipment.
   10. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.

B. The General Construction Contractor Contract 1 and Contract 2 is responsible and pays all costs for the following at thier respective buildings:
   1. Temporary toilets, including disposable supplies.
   2. Temporary wash facilities, including disposable supplies.
   3. Containerized bottled-water drinking-water units.
   4. Temporary daily janitorial services.
   5. First Aid Station and Supplies.
   6. Containers for non-hazardous waste and debris.
   7. Disposal of wastes containers.
   8. Barricades, warning signs, and lights.
   9. Security enclosure and lockup.
   10. Temporary Fire Protection
   11. Temporary Protection for existing flooring, from altered areas to exits.
   12. Construction aids and miscellaneous services and facilities.
   13. Temporary dust control.

1.9 TELECOMMUNICATIONS SERVICES

A. The and Each contractor shall provide and pay for its own telephone service. Provide mobile phone service for all field superintendents and foreman.

1.10 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

B. Maintain daily in clean and sanitary condition.

C. Sanitary Facilities: Sanitary facilities include temporary toilets, wash facilities and drinking water fixtures. Comply with governing regulations including safety and health codes for the type, number, location, operation and maintenance of fixtures and facilities; provide not less than specified requirements. Install in locations which will best serve the project's needs.

1. Responsibilities: The General Construction Contrat 1 and 2 is responsible for temporary sanitary facilities and their maintenance, including supplies at thier respective buildings. .
2. Install self-contained toilets to the extent permitted by governing regulations.
3. Supply and maintain toilet tissue, paper towels, paper cups and other disposable materials as appropriate for each facility for full contract duration. Provide covered waste containers for used material.
4. Provide separate toilet facilities for male and female construction personnel where required by law.

1.11 BARRIERS

A. Responsibility: General construction barriers required for the project shall be the responsibility of the each contractor

B. Barricades, Warning Signs and Lights: Comply with recognized standards and code requirements for erection of substantial, structurally adequate barricades where needed to prevent accidents and losses. Paint with appropriate colors, graphics and warning signs to inform personnel at the site and the public, of the hazard being protected against. Provide lighting where appropriate and needed for recognition of the facility, including flashing red lights where appropriate

1. Sign Materials: For signs and directory boards, provide exterior type, Grade B-B High Density Concrete Form Overlay Plywood conforming to PS-1, of sizes and thickness indicated. Provide exterior grade acrylic-latex-base enamel for painting sign panels and applying graphics.

C. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and removals .

D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.12 FENCING

A. Construction: Commercial grade chain link fence.

B. Provide 6 foot high fence around any materials or equipment stored on-site.; equip with vehicular and pedestrian gates with locks.

C. Locate where indicated, or if not indicated, as agreed with owner. Provide enclosed portions of the site determined to be sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs and other animals from easily entering the site, except through entrance gates.

1.13 SITE SAFETY AND SECURITY PROCEDURES

A. The existing building contains a security alarm system maintained and operated by the Owner. Access into the existing building shall not be permitted unless the owner is notified and arrangements made to deactivate the system.

1.14 VEHICULAR ACCESS AND PARKING

A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.

B. Coordinate access and haul routes with governing authorities and Yonkers Public Schools.

C. Provide and maintain access to fire hydrants, free of obstructions.

D. Existing parking areas may be used for construction parking as designated and approved by the Owner.

1.15 WASTE REMOVAL

A. The General Construction Contractor - Contract 1 and 2 shall provide containers, at grade, sufficient for the depositing of non- hazardous/non-toxic waste materials, and shall remove such waste materials from project site as required or directed by the Owner's representative.
   1. Provide specific containers for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
   2. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
   3. Contractors shall not utilize the Owner's bins or dumpsters.

B. Each Contractor shall broom clean the work area at the end of each work day.
   1. If the contractor fails to clean areas at the end of each work day the Owner shall perform the cleaning and back charge the contractor accordingly.

C. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

D. Provide containers with lids. Remove trash from site periodically.

E. The contractor shall be responsible for daily cleaning up of spillage and debris resulting from its operations and from those of its subcontractors; and shall be responsible for complete removal and disposition of hazardous and toxic waste materials.
   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.

F. Burying or burning of waste materials on the site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

G. Provide rodent proof containers located on each floor level to encourage depositing of garbage and similar wastes by construction personnel.

H. Site: The Contractor shall maintain Project site free of waste materials and debris.

I. Installed Work: Keep installed work clean. The Contractor shall 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.

J. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

K. Work Areas: Each Contractor shall clean areas daily 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.

L. Each Prime Contractor is responsible to provide dust protection for their construction-related activities.

M. If daily cleaning and dust protection is not provided the Contractor will be back charged for cleanup performed by employees of the Owner or a separate contractor retained by the Owner.

1.16 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing facilities used during construction to original condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION -

3.1 STORAGE FACILITIES

A. Each Contractor and each subcontractor shall provide temporary storage facilities as required for his own use. Temporary structures shall be located at the fenced staging area, and shall be removed upon completion of the work or when directed.

B. Materials delivered to the site shall be safely stored and adequately protected against loss or damage. Particular care shall be taken to protect and cover materials that are liable to be damaged by the elements.

C. Due to limited on site storage space, each Contractor shall coordinate delivery of his materials with the Owner's Representative who will determine when large deliveries shall be made and shall be designate storage locations on site for delivered materials. All stored materials must be stored in locked, watertight trailers, paid for by applicable contractor.

3.2 FIRE PREVENTION AND CONTROL

A. Refer to Section 01 3553 - Site Safety and Security Procedures.

B. Each Contractors shall comply with the safety provisions of the National Fire Protection Association's "National Fire Codes" pertaining to the work and, particularly, in connection with any cutting or welding performed as part of the work

3.3 DISCONTINUE, CHANGES AND REMOVAL

A. Each Contractors shall:

1. Discontinue all temporary services required by the Contract when so directed by the Owner's Representative and Architect.
2. The discontinuance of any such temporary service prior to the completion of the work shall not render the Owner liable for any additional cost entailed thereby and the Contractor shall thereafter furnish, at no additional cost to the Owner, any and all temporary service required by such Contractors work.
3. Remove and relocate such temporary facilities as directed by the Owner's Representative without additional cost to the Owner, and shall restore the site and the work to a condition satisfactory to the Owner.

3.4 ENVIRONMENTAL PROTECTION:

A. Each Prime Contractor shall provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near Project site.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.

1. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

END OF SECTION

SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. General product requirements.

B. Re-use of existing products.

C. Transportation, handling, storage and protection.

D. Product option requirements.

E. Substitution limitations.

F. Procedures for Yonkers Public Schools-supplied products.

G. Maintenance materials, extra materials.

1.3 RELATED REQUIREMENTS

A. Section 00 4401 - Qualification of Bidders.

B. Section 01 1000 - Summary of Contract.

C. Section 01 2500 - Substitution Procedures: Substitutions made after the Bidding/Negotiation Phase.

D. Section 01 4000 - Quality Requirements: Product quality monitoring.

E. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions: Requirements for VOC-restricted product categories.

F. Section 01 7419 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.

1.4 REFERENCE STANDARDS

A. ISO 21930 - Sustainability in buildings and civil engineering works -- Core rules for environmental product declarations of construction products and services; 2017.

B. NEMA MG 1 - Motors and Generators; 2017.

C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.5 DEFINITIONS

A. Refer to General Conditions and Section 01 4216 - Definitions for addtional definistions.

B. Products: Items purchased 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.

C. 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.

D. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.

E. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, 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.

F. Substitutions: Changes in products, materials, equipment, and methods of construction from those required or specified by the Contract Documents and proposed by Contractor.

G. Basis-of-Design Or Equal Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," or "or equal", including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers **shall be submitted as substitutions**.

1. Refer to Section 01 2500 - Substitution Procedures.

H. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

1.6 SUBMITTALS

A. Refer to Section 01 3000 - Administrative Requirements for additional requirements

B. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

1. Submit within 10 days after date of Notice of Award.
2. For products specified only by reference standards, list applicable reference standards.

C. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

D. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

E. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

1.7 ASBESTOS

A. Asbestos: All products, materials, etc., used in conjunction with this Project shall be Asbestos-Free.

1. Contractor shall provide a certified letter to the Owner's Representative stating that no asbestos containing material has been used in this project. Refer to Section 01 7800 - Closeout Submittals.

B. HVAC and sub contractors must provide test results upon completion from a New York State accredited testing lab certifying that all pipe insulation and joints on this project contain no asbestos.

1. This certification shall be based on a sampling of 10% of all linear feet of pipe insulation, (unless manufacturer's certificate is submitted).

PART 2 PRODUCTS

2.1 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.

B. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Yonkers Public Schools, or otherwise indicated as to remain the property of the Yonkers Public Schools, become the property of the Contractor(s); remove from site.

2.2 NEW PRODUCTS

A. Provide new products for all unless otherwise specifically required or permitted by the Contract Documents.

B. Use of products having any of the following characteristics is not permitted:
   1. Made outside the United States, its territories, Canada, or Mexico.
   2. Made using or containing CFC's or HCFC's.
   3. Made of wood from newly cut old growth timber.
   4. Containing lead, cadmium, or asbestos.

C. Where other criteria are met, TBD shall give preference to products that:
   1. If used on interior, have lower emissions, as defined in Section 01 6116.
   2. If wet-applied, have lower VOC content, as defined in Section 01 6116.
   3. Are extracted, harvested, and/or manufactured closer to the location of the project.
   4. Have longer documented life span under normal use.
   5. Result in less construction waste. See Section 01 7419
   6. Are Cradle-to-Cradle Certified.
   7. Have a published Environmental Product Declaration (EPD).
   8. Have a published Health Product Declaration (HPD).

2.3 PRODUCT OPTIONS

A. Refer to Section 00 2113 - Bidding Requirements for Product/Assembly/System Substitutions.

B. Refer to Section 01 2500 - Substitution Procedures.

2.4 MAINTENANCE MATERIALS

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
   1. Deliver to Construction Manager; obtain receipt prior to final payment.

PART 3 EXECUTION

3.1 SUBSTITUTION LIMITATIONS

A. See Section 01 2500 - Substitution Procedures.

B. **Fuller and D'Angelo, P.C. will consider requests for substitutions only within 30 days after date** Letter of Award**.**

C. Substitutions will not be considered during the bidding phase.

D. A request for substitution constitutes a representation that the bidder:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
   2. Agrees to provide the same warranty for the substitution as for the specified product.
   3. Agrees to coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Yonkers Public Schools.
   4. Waives claims for additional costs or time extension that may subsequently become apparent.
   5. Agrees to reimburse Architect, Owner, Engineer, and Construction Manager for review or redesign services associated with re-approval by authorities.

3.2 SUBSTITUTION SUBMITTAL PROCEDURE AFTER BIDDING PHASE

A. Refer to Section 01 2500 - Substitution Procedures.

B. Substitution Request Form: Use form provided in 01 2500 Substitution Procedures.

C. Submit in electronic PDF format one copy of request for substitution for consideration. Limit each request to one proposed substitution.

3.3 TRANSPORTATION AND HANDLING

A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.

B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.

C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

D. Transport and handle products in accordance with manufacturer's instructions.

E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.4 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 7419.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Provide off-site storage and protection when site does not permit on-site storage or protection.

1. Execute a formal supplemental agreement between Yonkers Public Schools and TBD allowing off-site storage, for each occurrence.

G. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

H. Comply with manufacturer's warranty conditions, if any.

I. Do not store products directly on the ground.

J. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

K. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

L. Prevent contact with material that may cause corrosion, discoloration, or staining.

M. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

N. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 7000
EXECUTION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Requirements for alterations work, including selective removals .

C. Pre-installation meetings.

D. Cutting and patching.

E. General installation of products.

F. Progress cleaning.

G. Protection of installed construction.

H. Correction of the Work.

I. Dust control

J. Cleaning and protection.

K. Starting of systems and equipment.

1.3 RELATED REQUIREMENTS

A. YPS General Engineering Aggrement for additional requirements.

B. Section 01 3000 - Administrative Requirements: Submittals procedures, Electronic document submittal service.

C. Section 01 4000 - Quality Requirements: Testing and inspection procedures.

D. Section 01 3553 - Site Safety and Security Procedures .

E. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties .

F. Section 07 9200 - Joint Sealants.

G. Individual Product Specification Sections:
   1. Advance notification to other sections of openings required in work of those sections.
   2. Limitations on cutting structural members.

1.4 REFERENCE STANDARDS

A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.

4. Visual qualities of sight exposed elements.
5. Include in request:
   a. Necessity for cutting or alteration.
   b. Description of proposed work and products to be used.

1.6 PROJECT CONDITIONS

A. Use of explosives is not permitted.

B. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
   1. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Yonkers Public Schools.

C. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
   1. At All Times: Excessively noisy tools and operations will not be tolerated inside the building at any time of day; excessively noisy includes jackhammers.
   2. Outdoors: Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.
   3. Indoors: Limit conduct of especially noisy interior work to the hours of 6 pm to 7 am.

1.7 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Contract Manual and Specification to ensure efficient and orderly sequence of installation of interdependent construction elements.

B. Coordinate completion and clean-up of work of separate sections.

C. After Yonkers Public Schools occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Yonkers Public Schools's activities.

D. General: The General Construction Contractor includes general coordination of the entire work of the project, including preparation of general coordination drawings, diagrams and schedules and control of site utilization from the beginning of construction activity through project closeout and warranty periods.

E. Alterations: Where applicable, requirements of the contract documents apply to alteration work in the same manner as to new construction. Refer to drawings for specific requirements of alteration work. Primarily, alterations can be described as normal architectural, mechanical and electrical alterations. Contractors shall review phasing and scheduling of the work to understand that certain areas of work must be completed and occupied prior to start of other work. This is essential to the Owner in their ability to maintain the educational programs during construction.

1.8 CODES, PERMITS, FEES, ETC. []

A. Refer to Section 01 4100 Regalatory Requirements.

1.9 MANDATORY OSHA CONSTRUCTION SAFETY AND HEALTH TRAINING

A. Pursuant to NYS Labor Law §220-h - On all public work projects all laborers, workers and mechanics working on the site are required to be certified as having successfully completed an OSHA construction safety and health course of at least 10 hours prior to performing any work on the project.

PART 2 PRODUCTS

2.1 MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000 - Product Requirements.

D. Barriers shall be constructed of sturdy lumber having a minimum size of 2 x 4.
   1. Signs shall be made of sturdy plywood of 1/2" minimum thickness and shall be made to legible at a distance of 50 feet.

PART 3 EXECUTION

3.1 EXAMINATION

A. Prior to start of construction take photographs, video's or similar documentation as evidence of existing project conditions as follows:
   1. Interior views: Each room and areas of outside work area which could be construded as damaged caused by the contractor.
   2. Exterior views: Each area of work and areas of outside work area which could be construded as damage caused by the contractor.

B. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.3 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a preinstallation meeting at the site **prior to commencing work of the section.**

B. Require attendance of parties directly affecting, or affected by, work of the specific section.

C. Notify Owner's Representative and Architect four days in advance of meeting date.

D. Prepare agenda and preside at meeting:
   1. Review conditions of examination, preparation and installation procedures.
   2. Review coordination with related work.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Fuller and D'Angelo, P.C. , Yonkers Public Schools, participants, and those affected by decisions made.

3.4 REMOVAL AND DUST CONTROL

A. The following procedures shall be followed when removals will create dust:
   1. Exterior
      a. Work must be in compliance with OSHA Construction Standard (29 CFR 1926.62).
      b. Windows directly below, above and adjacent to the work area shall be closed.
      c. Provide tarps on the outside of the building to catch all dust, debris and paint chips when items are being removed and installed.
      d. Roof top exhaust fans and HVAC equipment to shut down and intakes covered.
   2. Interior:

a. Floor surfaces shall be provided with a minimum of one layer of six mil plastic.
b. All air vents in the room shall be closed, shut off and sealed.
c. Access to all rooms undergoing removals shall be restricted to prevent unauthorized entry.
d. All moveable objects will be moved away from the vicinity of the removals by the Contractor. The Contractor shall cover with a drop cloth.
e. All corridors used by Contractors shall be mopped and left clean daily.

3. Contractor shall provide labor for daily cleanup on the interior and the exterior of the building as required or directed by the Owner's Representative. Any visible debris shall be removed prior to occupancy the following day.
4. All debris shall be disposed of properly in accordance with Federal, State and Local Regulations. Refer to Section 01 5000 - Temporary Facilities and Controls sections for containers required.
5. Do not leave any openings unprotected at end of work day or during periods of excessive cold weather or precipitation.
6. At completion of each work area HEPA vacuumed and wet wiped.

3.5 CHEMICAL FUMES AND OTHER CONTAMINATES

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

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

3.6 GENERAL INSTALLATION REQUIREMENTS

A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.

B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

D. Saw cut all concrete slabs and asphalt paving.

E. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

F. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

G. Make neat transitions between different surfaces, maintaining texture and appearance.

3.7 ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
1. Verify that construction and utility arrangements are as indicated.
2. Report discrepancies to Owner's Representative and Architect before disturbing existing installation.
3. Beginning of alterations work constitutes acceptance of existing conditions.

B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 in locations indicated on drawings.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.

D. Remove existing work as indicated and as required to accomplish new work.
1. Remove items indicated on drawings.
2. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
3. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.

E. Services (Including but not limited to Electrical): Remove, relocate, and extend existing systems to accommodate new construction.
1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
    a. Identify new equipment installed, but not in service, with appropriate signage or other forms of identification. indicating "Not in Service".
    b. Disable existing systems only to make switchovers and connections; minimize duration of outages.
    c. Provide temporary connections as required to maintain existing systems in service.
    d. Perform all switchovers, shutdowns, etc after hours, weekends, holidays or times when the building is not occupied. All switchover scheduling shall be approved by the Owner.
4. Verify that abandoned services serve only abandoned facilities.
5. Remove conduits; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.

F. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
3. Repair adjacent construction and finishes damaged during removal work.
4. Patch as specified for patching new work.

G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.

H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.

I. Refinish existing surfaces as indicated:

J. Remove debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.

K. Do not begin new construction in alterations areas before removals are complete.

L. Comply with all other applicable requirements of this section.

3.8 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. See Alterations article above for additional requirements.

C. Perform whatever cutting and patching is necessary to:
1. Complete the work.

2. Fit products together to integrate with other work.
3. Provide openings for penetration of electrical and other services.
4. Match work that has been cut to adjacent work.
5. Repair areas adjacent to cuts to required condition.
6. Repair new work damaged by subsequent work.
7. Remove samples of installed work for testing when requested.
8. Remove and replace defective and non-complying work.

D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing.

E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

F. Restore work with new products in accordance with requirements of Contract Documents.

G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. Patching:
1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
2. Match color, texture, and appearance.
3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

I. Make neat transitions. Patch work to match adjacent work in texture and appearance. Where new work abuts or aligns with existing, perform a smooth and even transition.

3.9 SPECIAL REQUIREMENTS

A. All existing systems are required and shall remain operational during the performance of the work.

B. Notwithstanding anything contained in the Contract Documents to the contrary, the contractor shall not be permitted to disrupt operation of any building system or any of the services without Owner's prior written consent, which shall not be unreasonably withheld. Any request to perform such work shall be in writing, received by Owner and Architect no less than 5 working days prior to the commencement of the request for disruption, and shall detail:
1. The exact nature and duration of such interruption;
2. The area of the Building affected, and;
3. Any impact upon the Construction Schedule caused by such proposed temporary disruption. All Work shall be performed during the hours and on the days set forth in the Specifications.

3.10 WATCHMAN

A. The Owner will not provide watchman. The Contractor will be held responsible for loss or injury to persons or property or work where his work is involved and shall provide such watchman and take such precautionary measures as he may deem necessary to protect his own interests.

3.11 SECURITY SYSTEM Refer to 01 3553 - Security Procedures

A. The existing building contains a security alarm system maintained and operated by the Owner. Access into the existing building shall not be permitted unless the owner is notified and arrangements made to deactivate the system.

3.12 VERIFICATION OF CONDITIONS

A. All openings, measurements, door frames, existing conditions and other similar items or conditions shall be field measured prior to submission of any shop drawings or manufacturers literature for approval.
1. The Contractor shall investigate each space into and through which equipment must be moved. Equipment shall be shipped from manufacturer in sections, of size suitable for moving through restricted spaces. Where sectional fabrication and or delivery cannot be achieved, openings,

enlargements etc shall be provided by each contractor whose equipment requires access, at no additional cost to the Owner.

3.13 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

E. The Contractor is responsible for their own daily debris removal into containers provided by the Contractor. Working areas are to be broom swept on a daily basis by the Contractor.

F. The Contractor is responsible to provide dust protection for their construction-related activities.

G. If daily cleaning and dust protection is not provided the Contractor will be back charged for cleanup performed by employees of the Owner or a separate contractor retained by the Owner.

3.14 PROTECTION OF INSTALLED WORK

A. The Contractor shall be responsible for the protection of all his work and shall make good all damage to the Owners property, adjoining property, and/or to any work or material in place in the premises, or included in his contract, which is caused by his work or workmen. which may occur to his work prior to the date of the final acceptance.

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

B. The Contractor shall be held responsible for and be required to make good at his own expense any and all damage done to the Owners property, adjoining property, and/or to any work or material in place in the premises, or included in his contract, which is caused by his work or workmen.

C. Protect installed work from damage by construction operations.

D. Provide special protection where specified in individual specification sections.

E. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

F. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

G. Protect work from spilled liquids. If work is exposed to spilled liquids, immediately remove protective coverings, dry out work, and replace protective coverings.

H. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

I. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.15 FINAL CLEANING

A. Final cleaning shall be the responsibility of the contractor and all costs for final cleaning shall be included in the Base Bid. Final cleaning responsibility shall be limited to all new additions and areas where renovations occur.

B. Execute final cleaning prior to final project assessment.

C. Use cleaning materials that are nonhazardous.

D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

E. Clean debris from area drains.

F. Clean site; sweep paved areas, rake clean landscaped surfaces.

G. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

H. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

I. Remove snow and ice to provide safe access to building.

J. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

K. Touch up and otherwise repair and restore marred, exposed finishes and surfaces evidence of repair or restoration. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show

L. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

M. Leave Project clean and ready for occupancy.

3.16 CLOSEOUT PROCEDURES Refer to Section 01 7800

END OF SECTION

SECTION 01 7800
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. Substantial Completion.

B. Final Completion.

C. Project Record Documents.

D. Warranties and bonds.

1.3 RELATED REQUIREMENTS

A. YPS General Engineering Agreement Article 81 for additional requirements.

B. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

C. Individual Product Sections: Warranties required for specific products or Work.

1.4 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion:
   1. Advise Owner's Representative and Architect of pending insurance changeover requirements.
   2. Obtain and submit releases permitting Owner's Representaive and Architect unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   3. Substantial Completion shall be when all work is completed, including all punch lists.

B. Prior to issuance of the Certificate of Substantial Completion, submit, in writing, a request to the Owner's Representaive and Architect a request to perform site inspection for the purpose of preparing a "punch list".

C. Certificate of Substantial Completion will be issued **after completion of all punch list items** or Owner's Representative and Architect will notify Contractor of items, either punch list or additional items identified by Architect, **that must be completed or corrected before certificate** will be issued. After completion of "punch list" items submit the following:
   1. Application for Payment showing 100 percent completion for portion of the Work claimed as substantially completed the following:
   2. Manufacturer's Warranties (guarantees).
   3. Contractor's Warrantee (Five Years) and extended warranties.
   4. Manifest for disposal of Hazardous material.
   5. Final cleaning.
   6. List of incomplete Work, recognized as exceptions to Owner's Representative and Architect's "punch list".
   7. Owner's Representative and Architect's punch list certifying all punch list items have been completed with each item signed off by the Owner's Representative and Contractor.
   8. Removal of temporary facilities and services.
   9. Removal of surplus materials, rubbish and similar elements.
   10. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

11. As Built Drawings.
12. Project Record Documents.

D. Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
   1. If necessary re-inspection will be repeated and the contractor shall pay for all additional inspections.
   2. Results of completed inspection will form the basis of requirements for Final Completion

1.5 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
   1. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Owner's Representative and Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will not process a final Certificate for Payment until after the inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
      a. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

B. Following Final Inspection acceptance of work submit the following:
   1. Submit a final Application for Payment according to Section 01 2000 - Price and Payment Procedures.
   2. Submit certified copy of Architect's Substantial Completion punch list items endorsed and dated Contractor and Owner's Representative certifying each item has been completed or otherwise resolved for acceptance.
   3. Update final statement, accounting for final changes to the Contract Sum.
   4. Release of liens from contractor and all entitles of the contractor.
   5. Consent of Surety to Final Payment, AIA Document G707
   6. Final Liquidated Damages settlement statement.
   7. Contractor's Affidavit of Release of Liens (AIA G706A).
   8. Contractors Affidavit of Payment of Debts and Claims (AIA G706).
   9. Contractor's Certification of Payment of Prevailing Wage Rates.
   10. Contractor's Certified Statement that no asbestos containing material was incorporated into the project.
   11. Asbestos manifest.
   12. Underwriters Certificate.

1.6 SUBMITTALS

A. Contractor shall submit all documentation identified in this section within thirty (30) working days from the time the Contractor submits the list of items to be corrected, in addition to other rights of the Owner set forth elsewhere in the Contract Documents, to include but not limited to withholding of final payment. If the documentation has not been submitted within Thirty (30) day period, the Owner will obtain such through whatever means necessary. The Contractor shall solely be responsible for all expenses incurred by the Owner, provided the Owner has advised the Contractor of this action seven 7 days prior to the culmination date by written notice

B. Project Record Documents: Submit documents to Fuller and D'Angelo, P.C. with claim for final Application for Payment.

C. Warranties and Bonds:
   1. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.
   5. Reviewed shop drawings, product data, and samples.
   6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Yonkers Public Schools.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Field changes of dimension and detail.
   2. Details not on original Contract drawings.

3.2 RECORD DRAWINGS

A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and approved Shop Drawings at the project site.

B. The Contractor is responsible for marking up Sections that contain its own Work and for submitting the complete set of record Specifications as specified.

C. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

D. Content: Types of items requiring marking include, but are not limited to, the following:
   1. Revisions to details shown on Drawings.
   2. Revisions to electrical circuitry.
   3. Changes made by Change Order or Construction Change Directive.
   4. Changes made following Architect's written orders.
   5. Details not on the original Contract Drawings.

E. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.

F. Mark important additional information that was either shown schematically or omitted from original Drawings.

G. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

H. **Provide three copies of final record contract drawings, specifications and approved shop drawings on CD in PDF format.**

3.3 FORMAT

A. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Contractor shall certify and sign.

B. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

C. Identify Record Drawing as follows:
   1. Project name.
      a. Date.
      b. Designation "PROJECT RECORD DRAWINGS."
      c. Name of Architect and Owner's Representative.
      d. Name of Contractor.
      e. Contractor shall certify and sign each drawing

3.4 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

C. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.5 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

A. Assemble operation and maintenance data into durable manuals for Yonkers Public Schools's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.

B. Where systems involve more than one specification section, provide separate tabbed divider for each system.

C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Owner's Representative, Fuller and D'Angelo, P.C., Consultants, Construction Manager, Contractor, and Subcontractors , with names of responsible parties.

F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.

G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.

H. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.

I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

J. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.
   1. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.

3.6 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Yonkers Public Schools's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

CHECKLIST FOR PROJECT CLOSEOUT

AND PROCESSING OF FINAL PAYMENT

A. **PROJECT:** Multiple Schools Building Envelope Renovation.

BOARD OF EDUCATION BID NUMBER;

CLOSE-OUT SUBMITTALS: (As Applicable)

[ ] PREVAILING WAGE CERTIFICATION.

[ ] UL CERTIFICATION

[ ] ALL APPROVED SHOP DRAWINGS.

[ ] CERTIFICATES OF COMPLIANCE AND INSPECTION. (WHERE APPLICABLE MANUFACTURER'S REPORTS, ELECTRIC, ELEVATOR, ETC.)

[ ] NOTARIZED STATEMENT THAT ONLY NON-ASBESTOS MATERIALS WERE INSTALLED ON THIS PROJECT.

[ ] FULLY EXECUTED CERTIFICATE OF SUBSTANTIAL COMPLETION: AIA G704.

[ ] CONTRACTOR'S WRITTEN FIVE-YEAR WARRANTY, MANUFACTURER'S WARRANTY, AND EXTENDED WARRANTIES (IF ANY REQUIRED).

[ ] PROJECT RECORD DOCUMENTS: SECTION 7800**.**

[ ] AS-BUILT DRAWINGS.

EVIDENCE OF PAYMENT AND RELEASE OF LIEN

[ ] CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS: AIA G706.

[ ] CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS - AIA G706A PRIME CONTRACTORS AND SUBCONTRACTORS.

[ ] CONSENT OF SURETY TO FINAL PAYMENT AIA G707.

REFER TO SECTION 01 7800 PAR 1.4 AND 1.5 FOR ADDITIONAL REQUIREMENTS. FINAL PAYMENT WILL NOT BE PROCESSED UNTIL ALL ITEMS INDICATED ARE RECEIVED IN ACCORDANCE WITH SECTION 01 7800 - CLOSEOUT SUBMITTALS.

END OF SECTION

SECTION 02081
ASBESTOS REMOVAL AND DISPOSAL

PART 1 - GENERAL

1.01 Work Included

A. The Contractor shall furnish all labor, materials, services, insurance, patents, and equipment necessary to perform the Work of this Contract. All work will be conducted in compliance with EPA, OSHA, and NYS regulations, any other applicable federal, state, and local regulations and in accordance with these specifications. In the event there is a conflicting point between these provisions, the most stringent one shall apply.

B. The work will involve the removal of all Asbestos Containing Materials and all Asbestos Waste from within the Work Zones in accordance with all applicable rules and regulations and this specification. Location of asbestos indicated on the Drawings is provided for guidance only. The Contractor shall be responsible for establishing exact quantities and locations for abatement. The project will take place at PS29 and Pearls Hawthorne Schools, located in Yonkers, New York.

Removal shall be performed in accordance with New York State Industrial Code Rule 56, modified containment procedures and the Contract Documents.

The project shall be conducted as follows:

PS29

1. Flashing Tar and Felt Paper – 1700 SF Roof K, G, D, A, E and H
2. Flashing Tar – 300 SF Roof B and C
3. Tar on Top of Parapet Wall Under Metal Cover – 24 SF - Roof M
4. Off-White Windows Caulking – 215 LF - Roof K, L, H and I (Old Gym Windows)

Pearls Hawthorne

1. Roofing (Under EPDM Roof) – 15,400 SF - Roof S, Q, W and V
2. Roofing (Under EPDM Roof) – 9730 SF - Roof R, T and U
3. Roofing (Under EPDM Roof) – 4,425 SF - Roof K
4. Flashing – 900 SF - Roofs S, Q, V and W
5. Flashing – 650 SF - Roofs R, T and U
6. Flashing – 540 SF - Roof K
7. Exhaust Vent Caulking Yellow/Grey – 30 LF - Roof S
8. Cap Flashing Caulking White/Black – 12 LF - Roof T
9. Tar on Exhaust Fan – 4 SF - Roof Q
10. Roofing Membrane Under EPDM – 56 SF - Roof P Canopy
11. Tar on Metal Cover – 15 SF - Roof K Center
12. Tar on Chimney – 8 SF - Roof K
13. Window Caulking – 1100 LF – 2 layers of caulking
14. Assumed Asbestos containing pipe insulation and fittings – 60 LF. Material will be sampled and tested, and if found to be negative for asbestos then we will request and negotiate a credit change order from the asbestos contractor.

15. Window lentil waterproofing Assumed ACM – 48 SF – 12 Locations Material will be sampled and tested and if found to be negative for asbestos then we will request and negotiate a credit change order from the asbestos contractor.

All contaminated debris shall be disposed of as asbestos containing material containing PCB's in accordance with all applicable rules, regulations, and guidelines. The abatement contractor will need to abate the windows and dispose of the exterior window caulking as follows:

All caulking that has PCB levels above 50 ppm, the waste from abatement of all caulking should be properly handled by a licensed asbestos contractor that is hazmat trained and disposed of at a regulated and permitted facility that can handle high levels of PCB waste.

Contractor to re-insulate all piping, fittings, and ducts and this cost to be included in base bid.

If a site-specific variance is required, the contractor shall obtain one and all cost shall be borne by the contractor.

NOTE:

1) The abatement areas shown on the drawings are provided for guidance only and no claims are made as to their accuracy. **The Contractor is alone responsible for determining the actual abatement quantities. If quantities differ the Contractor is responsible for bringing the discrepancy to the Construction Manager/Engineer's attention before any removal work proceeds. Once the project is started the Contractor shall be responsible for the removal of all asbestos containing materials at the contractors cost regardless of differences in the stated quantities provided in this specification.**

2) **In the event that clearance samples do not pass, the Asbestos Abatement Contractor will be responsible for all costs associated with resampling.**

3) Removal of the asbestos containing materials from this building will be conducted in accordance with NYS Industrial Code Rule 56, applicable variances, a site specific variance (if required) and the contract documents.

4) During the project other trades will be working in the building, the Asbestos Contractor shall coordinate all of his work with the other trades as required.

5) The Contractor is responsible for using " standard of care " when applying or removing tape, spray adhesive or any other type of bonding material from the walls, floors or ceilings. If damage is sustained to an area during the work procedure directly related to the negligence of the contractor then that Contractor is responsible for returning the area back to its original condition unless otherwise noted.

6) Critical barriers and the doorways shown on the drawing shall be covered with three layers of at least six-mil polyethylene sheeting sealed with tape.

7) The Contractor shall be responsible for all utility cable protection within the Work Zone Limits.

8) The Contractor is required to abide by the most current Prevailing Wage Rates at the time of the abatement project.

9) The Contractor shall furnish all labor, materials, services, insurance, patents, and equipment necessary to carry out the removal operation. All work will be conducted in compliance with EPA, OSHA, and NYS regulations, and any other applicable federal, state, and local regulations and in accordance with these specifications. In the event there is a conflicting point between these provisions, the most stringent one shall apply.

1.02 Definitions

A. ABATEMENT: Procedures to control fiber release from Asbestos-Containing Materials. This includes encapsulation, enclosure, and removal.

B. AIRLOCK: A system for permitting egress without permitting air movement between a contaminated area and an uncontaminated area, typically consisting of two Curtained Doorways at least 3 feet apart.

C. AIR MONITORING: The process of measuring the fiber content of a specific volume of air in a stated period of time.

D. AREA MONITORING: Sampling of asbestos fiber concentrations within the asbestos control area and outside the asbestos control area, which is representative of the airborne concentrations of asbestos fibers in the breathing zone.

E. AMENDED WATER: Water containing a wetting agent or surfactant.

F. ASBESTOS: Any hydrated mineral silicate separable into commercially usable fibers, including but not limited to chrysotile (serpentine), amosite (cumington-grunerite), crocidolite (riebeckite), tremolite, anthophyllite, and actinolite.

G. ASBESTOS CONTAINING MATERIAL (ACM): Any Asbestos or any material containing more than one percent of Asbestos by weight or volume.

H. ASBESTOS CONTAMINATED OBJECTS: Any object which has been contaminated by Asbestos or Asbestos Containing Material. This shall include all unprotected porous materials in an Asbestos Work Area.

I. ASBESTOS CONTROL AREA: An area where Asbestos Abatement operations are performed, which is isolated by physical boundaries to prevent the spread of asbestos dust, fibers, or debris.

J. ASBESTOS WASTE: Any Asbestos Containing Material or Asbestos Contaminated Objects requiring disposal.

K. AUTHORIZED VISITOR: The Owner, the Engineer, or a representative of any regulatory or other agency having jurisdiction over the project.

L. CLEAN ROOM: An uncontaminated area or room which is part of the Worker Decontamination Enclosure System, with provisions for storage of workers' street clothes and protective equipment.

M. COMPETENT PERSON: One who is capable of identifying existing asbestos hazards in the Work place and who has the authority to take prompt corrective measures to eliminate them as specified in 29 CFR 1926.32(f); Reference 29 CFR 1926.58(b) for duties and responsibilities.

N. CRITICAL BARRIER: Any windows, HVAC diffusers (exhaust or return), pipe sleeves, penetrations, doorways or any other openings leading to an occupied area of the building or to the outside.

O. CURTAINED DOORWAY: A device to allow egress from one room to another while permitting minimal air movement between the rooms, typically constructed of three overlapping sheets of plastic over an existing or temporary door frame. Attach a weight to each sheet and seal at alternating edges so as to produce a zig-zag pattern of entrance or exit.

P. ENCAPSULANT: A liquid material which can be applied to Asbestos-Containing Material and which controls the possible release of Asbestos fibers from the Asbestos Containing Material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant). This may also be used to seal surfaces from which asbestos containing materials have been removed.

Q. ENCAPSULATION: All herein specified procedures necessary to coat materials with an encapsulant to control the possible release of Asbestos fibers into the ambient air.

R. ENCLOSURE: All herein specified procedures necessary to complete enclosure of Asbestos Containing Materials behind an airtight and impermeable barrier.

S. EQUIPMENT ROOM: A contaminated area or room which is part of the Worker Decontamination Enclosure System, with provisions for the storage of contaminated clothing and equipment.

T. FIXED OBJECT: A unit of equipment or furniture in the Work Zone which cannot be removed from the Work Zone.

U. FRIABLE ASBESTOS MATERIAL: An Asbestos Containing Material that can be crumbled, pulverized, or reduced to powder when dry, by hand pressure or will crumble, be pulverized or produce powder when subjected to specific mechanical operation.

V. HEPA FILTER: A high efficiency particulate air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 micrometers in diameter.

W. HEPA VACUUM EQUIPMENT: High efficiency particulate air (absolute) filtered vacuuming equipment with a filter system capable of collecting and retaining asbestos fibers. Filters shall be of 99.97% efficiency for retaining fibers of 0.3 micrometers or larger.

X. HOLDING AREA: A chamber between the Washroom and an uncontaminated area in the Waste Decontamination Enclosure System. The Holding Area comprises an airlock.

Y. MOVABLE OBJECT: A unit of equipment or furniture in the Work Zone which can be removed from the Work Zone.

Z. NEGATIVE PRESSURE SYSTEM: A local exhaust system equipped with HEPA filtration that is capable of maintaining a minimum pressure differential of minus 0.05 inch of water column relative to adjacent unsealed areas.

AA. NON-FRIABLE ASBESTOS MATERIAL: An Asbestos Containing Material in which the fibers have been locked in by a bonding agent, coating, binder, or other material so that the Asbestos is well bound and that when dry cannot be crumbled, pulverized or reduced to powder by hand pressure and will not be subject to mechanical operations.

BB. PERSONNEL DECONTAMINATION ENCLOSURE SYSTEM: A Decontamination Enclosure System for Workers, typically consisting of an Airlock, an Equipment Room, a second Airlock, a Shower room, a third Airlock, and a Clean Room.

CC. PERSONAL MONITORING: Sampling of airborne asbestos fiber concentrations within the breathing zone of an employee.

DD. REMOVAL: All herein specified procedures necessary to strip all Asbestos Containing Materials from the designated areas.

EE. SHOWER ROOM: A room between the Clean Room and the Equipment Room in the Worker Decontamination Enclosure System, with hot and cold running water and suitably arranged for complete showering during decontamination. The Shower Room comprises an airlock between the Equipment Room and the Clean Room.

FF. SURFACTANT: A chemical wetting agent added to water to improve penetration of water into the Asbestos Containing Materials.

GG. TIME WEIGHTED AVERAGE (TWA): An 8-hour time weighted average of airborne fiber concentration per cubic centimeter of air. Three samples are required to establish the 8-hour time weighted average.

II. WASHROOM: A room between the Work Zone and the Holding Area in the Waste Decontamination Enclosure System. The Washroom comprises an airlock.

JJ. WASTE DECONTAMINATION ENCLOSURE SYSTEM: A Decontamination Enclosure System for materials and equipment, typically consisting of an Airlock, a Washroom, a second Airlock, and a Holding Room.

KK. WET CLEANING: The process of eliminating Asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water, and by afterwards disposing of these cleaning tools as Asbestos Waste.

LL. WORK SITE: Premises where Asbestos Abatement is taking place. The Work Site includes, but is not limited to the Work Zone, the Personnel and Waste Decontamination Systems, the staging area, the disposal route and the loading dock.

MM. WORK ZONE: Any area indicated on the Drawings as Asbestos Abatement areas or as areas with Asbestos Containing Material.

1.03 Submittals

A. Submit the following items to the Engineer for review twenty (20) days prior to the commencement of Work associated with this section:

1. EPA Notification: The form required by the Environmental Protection Agency in accordance with the National Emission Standard for Asbestos, 40 CFR Part 61.

2. New York State Department of Labor Notification: The form required by the State of New York Asbestos Control Program in accordance with Article 30 of the New York State Labor Law.

3. Any proposed project specific variance to any of the applicable regulations.

Upon return of submittals from the Engineer with an action stamp indicating that the submissions have been reviewed and comply with the contract documents, file all notifications with the appropriate agencies in accordance with all applicable regulations and these specifications. Pay the appropriate fees. All filing fees and associated costs shall be borne by the Contractor.

B. Submit the following items to the Engineer for review ten (10) days prior to the commencement of Work associated with this section. No Work shall begin until ALL submittals are returned with an action stamp indicating that the submission is in accordance with these specifications.

1. NOTIFICATIONS: Stamped received copies of the notifications (EPA only) and variances listed above in item A, as well as copies of the canceled checks used to pay all associated fees.

2. CONTRACTOR'S CERTIFICATION: Documentation confirming licensing by New York State Commission of Labor for asbestos Work in accordance with Industrial Code Rule 56.

3. WORKER DOCUMENTATION: Current copies of the AHERA certificates, New York State Department of Labor Asbestos Handling Certificates, Medical Exams and Respirator Fit Tests for all employees performing the Work of this Section.

4. EMPLOYEE RELEASE FORM: Prior to allowing an employee to perform any Work on the project, submit the properly executed Employee Release Form for each employee. A copy of this form is included herein.

5. CONTINGENCY PLANS: A copy of emergency, security, and contingency plans as follows:

a. A plan to provide for emergency and fire evacuation of personnel from the Work Zone in an emergency. File a copy of this plan with the local fire and/or ambulance unit;

b. A plan for maintaining the security of the Work Zone. The security plan shall provide a means of preventing accidental or unauthorized entry. Provide security to

the decontamination facility and all points of potential access to the Work Zone 24 hours per day during abatement. Submit the form of security and safety log that will be maintained on the project;

c. A contingency plan addressing emergencies, equipment failures, and barrier failure. Include the telephone numbers of at least three (3) responsible persons who shall be in the position to dispatch men and equipment to the project in the event of an emergency.

6. LANDFILL: Written evidence that the landfill to be used for disposal of asbestos is approved for disposal of asbestos by the New York State Department of Environmental Conservation (NYS Part 360 Permit) and by the US EPA. In the event the landfill is not located in New York State, approval from the agency having jurisdiction over the landfill must be received. Documentation that the proposed hauler and landfill have the proper permits and are willing to accept the asbestos waste.

The hauler must have a Waste Transporter Permit pursuant to Article 27, Titles 3 and 15, of the Environmental Conservation Law from the New York State DEC, Division of Hazardous Substance Regulations (NYS Part 364 Permit).

7. MATERIAL SAFETY DATA SHEETS: For all products intended to be used on the project, a Materials Safety Data Sheet in accordance with the OSHA Hazard Communication Standard 29 CFR 1910.1200. Include a separate attachment indicating the specific worker protection equipment required for each material.

8. PRESSURE MONITORING DEVICES; Manufacturer's data on type of equipment to be used to provide a continuous record of pressure differentials. Provide a drawing showing locations and number of units to be used.

9. AIR FILTRATION DEVICES: Manufacturer's data on type of equipment to be used to remove airborne asbestos.

10. ROOM INSPECTION: Inspect all areas in which Work is to be performed. Inspection shall occur in the presence of representatives of the Owner and Engineer. Record any existing damage to components, such as walls, doors, windows, carpeting, fixtures, and equipment. Any damaged components found after completion of the Work will be repaired at the Contractor expense. Make arrangements for the inspection, notify the participants, record the findings, and issue minutes of the inspection to all participants.

11. SCHEDULES: A copy of construction, staffing, and equipment schedules:

a. A construction schedule stating critical dates of the job including start and completion of mobilization, activation, deactivation, and demobilization of all Work activities (including mobilization, Work Zone preparation, asbestos abatement, inspection and clearance monitoring, each phase of refinishing, and final inspections). Update schedule with each partial payment request. Changes in schedule are subject to the Engineer's approval and require three (3) days prior notice.

b. A schedule of staffing stating number of workers per shift, name and number of supervisor(s) per shift, hours per shift, shifts per day, and total days to be worked;

c. A schedule of equipment to be used including numbers and types of all major equipment such as high efficiency particulate absolute (HEPA) air filtration units, HEPA vacuums, and airless sprayers.

12. INSURANCE POLICIES: The Environmental Contractor shall purchase and maintain during the life of this contract the insurances stipulated herein. This insurance must be purchased from a New York State licensed A.M. Best Rated "A" or "A+" carrier. The following list of Additionally Insured must be included under insurance policies held by the Contractor on this project with the exception of Workmen's Compensation and Employer's Liability Insurance, shall be named as additional insureds for the Commercial General Liability, Umbrella Liability, Hazardous Material Abatement General Liability and Business Automobile Policy:

a. Yonkers Public School and its employees
b. Fuller & D'Angelo P.C. Architects and its employees
c. Warren & Panzer Engineers and its employees

(1) *Workmen's Compensation and Employer's Liability Insurance:* Statutory Workmen's Compensation and Employer's Liability Insurance for all of his employees to be engaged shall require the Subcontractor similarly to provide Workmen's Compensation and Employer's Liability Insurance for all of the latter's employees to be engaged in such work.

(2) *Commercial General Liability:*
Explosion, Collapse & Underground Coverage shall be provided.

Products & Complete Operations Aggregate shall be maintained for a period of two years after final acceptance of the Owner.

(3) *Automobile Insurance:* Comprehensive Automobile Liability Insurance on owned, hired, or non-owned vehicle in amounts not less than $1,000,000 Combined Single Limit each occurrence.

(4) *Conditions of Coverage:* Bodily Injury and Property Damage coverage under both Commercial General and Commercial Automobile Insurance shall include the "occurrence" basic wording, which means an event or continuous or repeated exposure to conditions, which results bodily injury, sickness or disease including death at any time resulting therefrom. Coverage shall include liability arising from water damage, and property in care, custody and control of Contractor and Subcontractor.

(5) *Hazardous Material Abatement General Liability Occurrence Insurance:* A policy without a sunset clause, in amounts not less than $1,000,000, each occurrence, naming the Owner as the Certificate Holder. Also, include insurance policies of any subcontractor, including the Sudden and Accidental Pollution Liability Insurance required of the Hauler.

(6) *Contractor's Contingent Liability:* The Contractor shall procure, and for, and maintain such insurance as will protect the Contractor from his contingent liability for damages and for injury to the person or property of another which may arise from the operations of all Subcontractors under this Contract.

(7) *Contractor's and Employee's Equipment: The* Contractor assumes responsibility for all injury or destruction of the Contractor's materials, tools, machinery, equipment, appliances, shoring, scaffolding, false and form work, and personal property of Contractor's employees from whatever cause arises. Any policy of insurance secured covering the Contractor or Subcontractors leased or hired by them and any policy of insurance covering the contractor or subcontractors against physical loss or damage to such property shall include an endorsement waiving the right of subrogation against the Owner for any loss or damage to such property.

a. Coverage, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment.

b. The form of the Certificate of Insurance shall be AIA Document G705, Certificate of Insurance. In addition to the Certificate of Insurance, the Contractor shall provide the Owner with copies of any endorsements subsequently issued amending coverage or limits.

13. AIR SUPPLY SYSTEM: Manufacturer's product information for each component used in the Type "C" supplied air respiratory system, including NIOSH and MSHA Certifications for each component in an assembly and/or the entire assembly. Provide a notarized certification that the system is capable of providing Grade "D" breathable air. Submit a copy of the manufacturer's operations manual for the air purification system and the carbon monoxide monitor.

Prepare a drawing showing the assembly of components into a complete supplied air respiratory system. Document the number and size of electric air pumps and/or air supply tanks to be kept at the site at all times to ascertain that sufficient air is being supplied to the maximum number of users. Prepare a diagram showing the location of the electric air pumps, the air supply tanks and the hose line connections. The use of gas compressors will not be allowed. Submit complete operating and maintenance instructions for all components and systems as a whole. Bind manual in a form suitable for field use.

C. Daily during the conduct of abatement activities, submit to the Engineer the following:

Printouts from pressure differential monitoring equipment marked with date and Work start/stop times for each day. Use printout paper that indicates elapsed time in intervals no greater than one hour. Indicate on each day recording times of starting and stopping abatement Work, type of Work in progress, breaks, and filter changes. Cut printout into segments by day and label with project name, Contractor's name and date;

D. Within thirty (30) days of removal from the premises, submit to the Owner the disposal certificate(s) from the landfill receiving the Asbestos Waste stating dates and quantities received.

E. Within seven (7) days of completion of all Work associated with this Section submit to the Owner, the following:

1. A bound copy of the job log book showing sign in and sign out of all persons entering the Work Zone, including name, date, time, and position or function and a general description of daily activity. Keep these records on file for the duration of employment plus 30 years;

2. A notarized statement attesting that all personnel performing any work under this Contract were compensated in accordance with the prevailing wage rates contained herein.

1.04 Special Reports

A. Except as otherwise indicated, submit special reports directly to the Owner and the Engineer within one (1) day of the occurrence requiring the special report, with copies to all others affected by the occurrence.

B. When an event of unusual and significant nature occurs at the site (examples: failure of negative pressure system, rupture of temporary enclosures, unauthorized entry into Work Zone), prepare and submit a special report listing date and time of event, chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information.

C. Report any accidents, at the site and anywhere else Work is in progress related to this project. Record and document data and actions. Comply with industry standards.

1.05 Quality Assurance

A. Where methods or procedures are specified, they shall constitute minimum measures and shall in no way relieve the Contractor of sole responsibility for the means, methods, techniques, sequences, or safety measures in connection with the Work.

B. Provide foremen who speak fluent English to supervise all abatement activities. Foremen shall be certified as handler supervisors in accordance with Section 902 of the New York State Labor Law Article 30, and have experience in this field and can furnish a record of satisfactory performance on at least three (3) projects for Work of comparable type.

C. Any proposed Subcontractor performing any Work under this Section "Asbestos Removal and Disposal" shall have similar qualifications. Submit qualifications with the BID for any proposed Subcontractor. Submit Subcontractor qualifications in the same form and quantity as required for the Contractor.

1.06 Applicable Standards and Regulations

A. Perform all Work in compliance with the most current version of all pertinent laws, rules, and regulations, existing at the time of Work, including, but not limited to:

1. Code of Federal Regulations

a. Title 29 CFR Parts 1910.1001, 1910.1200, 1910.134 1926.58 and 1926.1101; [The Occupational Safety and Health (OSHA) Standards]

b. Title 30 CFR Part 61, Subpart G;
[The Transport and Disposal of Asbestos Waste]

c. Title 40 CFR, Part 61, Subparts A and M;
[The EPA National Emission Standard for Hazardous Air Pollutants, and the National Emission Standard for Asbestos]

d. Title 40 CFR, Part 763,
[Asbestos Containing Materials in Schools; Final Rule and Notice]

e. Title 49 CFR Parts 106, 107, and 171-179.
[The Transportation Safety Act of 1974 and the Hazardous Material Transportation Act]

f. Public Law 101-637
[ASHARA]

2. New York State Official Compilation of Codes, Rules and Regulations.

a. Title 12 Part 56

b. Title 10 Part 73

c. Title 6 Parts 360-364

d. Labor Law - Article 30 and Sections 900-912.

e. All applicable Additions, Addenda, Variances and Regulatory Interpretation Memoranda.

3. Applicable Standards

a. The American National Standard Institute (ANSI) Practices for Respiratory Protection ANSI Z88.2-1980.

b. The American National Standard Institute (ANSI) Fundamentals Governing the Design and Operation of Local Exhaust Systems.

c. UL 586 Test Performance of High Efficiency Particulate Air-Filter Units.

B. In the event there is a conflicting point between these provisions, the most stringent one shall apply.

1.07 Air Monitoring

A. Conduct personnel air monitoring in accordance with OSHA requirements. Collect a sufficient number of samples to determine the Time Weighted Average exposure of twenty percent (20%) of the work force.

B. The Owner will provide area air monitoring as follows:

Sample Type	Analysis Method
Pre-abatement	PCM
During abatement activities	PCM
Clearance air monitoring	PCM & TEM

The Contractor shall cooperate with the Owner's designated representatives with regard to air monitoring and project monitoring procedures. Ensure that employees and Subcontractors do the same.

C. If analysis of any of the air samples collected during abatement indicates that the airborne asbestos concentration outside the Work Zone is greater than or equal to 0.01 f/cc or the background level, whichever is greater:

1. Stop Work immediately;

2. Inspect the integrity of the barriers;

3. Wet clean and vacuum the location where elevated fiber counts were reported; and

4. Do not resume Work until such time when the airborne asbestos concentration outside the Work Zone is once again less than the above limit.

D. In order to pass PCM clearance testing, the analysis of each and every sample collected shall indicate that the airborne fiber concentration is less than 0.01 fibers per cubic centimeter or the background level whichever is greater.

E. In order to pass TEM clearance testing, each and every sample collected shall indicate that the airborne structure concentration is less than 0.01 structures per cubic centimeter or the background level whichever is greater and the average structure concentrations inside the Work Zone shall not be statistically larger than the average of ambient levels as determined by the Z-test.

F. The method of sampling shall be aggressive or non-aggressive depending on the requirements of applicable regulations. The method of analysis for pre-abatement and during abatement shall be NIOSH 7400 using Phase Contrast Microscopy (PCM). Transmission Electron Microscopy (TEM), in accordance with Appendix A to Subpart E-Interim TEM Analytical Methods and SED requirements, shall be used to analyze all post-abatement samples for this project. The testing laboratory shall be a member of the Environmental Laboratory Approval Program (ELAP).

G. In case of failure of the initial final air clearance monitoring, the work zone will be retested following immediate recleaning. This process will be repeated as necessary until final air clearance is obtained. All costs and expenses resulting from the additional recleaning and retesting (including sampling and analysis) due to failure of the initial final air clearance shall be borne by the Contractor. The expenses thereby incurred will be deducted from any monies due or that may become due to the Contractor.

H. The Contractor shall provide security personnel to watch the decontamination facility and all points of potential access to the Work Zone.

- END OF PART 1 -

PART 2 - PRODUCTS

2.01 Air Filtration Unit

A. Use only Air Filtration Units in compliance with ANSI Z9.2 (1979), Local Exhaust Ventilation. The final filter in each unit shall be of the HEPA type. Use only Air Filtration Units certified by the manufacturer to have an efficiency of not less than 99.97 percent when challenged with 0.3 micron dioctylphthalate (DOP) particles.

B. Equip the system with the following:

1. An automatic shutdown that will stop the fan in the event of a rupture in the HEPA filter or blocked air discharge;

2. Warning lights and/or alarms to indicate an excessive pressure drop across the filters or an insufficient pressure drop across the filters;

3. A non-resettable elapsed time meter to indicate the total accumulated hours of operation;

4. A gauge or manometer to measure the pressure drop across the filter.

2.02 Asbestos Caution Signs

A. Use Asbestos Caution Signs as specified in OSHA Title 29 CFR 1910.1001(j) and 1926.58(k). Posting of warning signs in and around the work site should be in cooperation with the Department of Correction and with approval by the Department of Correction.

2.03 Asbestos Caution Labels

A. Use Asbestos Caution Labels as specified in OSHA Title 29 CFR 1910.1001(j) and 1926.58(k).

2.04 Disposal Bags

A. Use Disposal Bags which are a minimum six (6) mil in thickness, clear in color and preprinted with the Asbestos Caution Label.

2.05 Encapsulating Material

A. All Encapsulating Materials shall be approved by UL for use in class 1A buildings and shall have composite fire and smoke hazard ratings as tested under procedure ASTM E- 84, NFPA 255 and UL 723

Flame Spread	25
Smoke Developed	50

B. If the removal of fireproofing materials is included in this Contract, select an encapsulant from those approved by UL for use with the new fireproofing. If Retro-Guard Type RG or RG-1 manufactured by W.R. Grace & Co. is to be applied, use American Coatings 22P & 22 Powerlock, or Fiberlock Fiberset FT and Fiberset PM, or Certane 909 and 1000, or H.B. Fuller 32-60 and 32-61, or IPC Serpliflex and Serpiloc.

2.06 Equipment

A. Temporary lighting, heating, hot water heating units, ground fault interrupters, and all other equipment on site shall be UL listed and shall be safe, proper, and sufficient for the purpose intended.

B. All electrical equipment shall be in compliance with the National Electric Code. Attention is specifically called to Article 305 Temporary Wiring.

2.07 First Aid Kits

A. Maintain adequately stocked first aid kits in the Clean Room and Work Zone, in accordance with OSHA requirements.

2.08 High Efficiency Particulate Air (HEPA) Filters

A. Employ filters which have been individually tested and certified by the manufacturer to have an efficiency of not less than 99.97 percent when challenged with 0.3 micron dioctylphthalate (DOP) particles, in accordance with Military Standard Number 282 and Army Instructional Manual 136-300-175A. Each filter shall bear a US 586 label to indicate ability to perform under the specified conditions.

B. Each HEPA filter shall be marked with the name of the manufacturer, serial number, air flow rating, efficiency and resistance, and the direction of air flow.

2.09 Glovebags

A. Use only commercially available Glovebags. Use Glovebags constructed of clear fire retardant plastic, which have a minimum thickness of six (6) mil.

B. Use Glovebags appropriately sized for the pipe. Use Glovebags, the dimensions of which exceed the pipe insulation diameter by a factor of four (4).

2.10 Plastic

A. Use only new fire retardant plastic sheets of polyethylene, which has a minimum thickness of 6 mil, true grade.

B. For the initial floor protective layer use only new reinforced plastic sheets of polyethylene, which has a minimum thickness of ten (10) mil, true grade. As an alternative, apply a ten (10) mil thick layer of "Spray-Poly" by Isotek or as approved.

2.11 Plywood

A. Use only fire-rated CDX plywood, which is at minimum one half inch (1/2") in thickness.

2.12 Respirators

A. Use only respirators approved by the Mine Safety and Health Administration (MSHA), Department of Labor, or the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services.

2.13 Sealants

A. Use a combination fire stop foam and fire stop sealant. Use Dow Corning Fire Stop Foam and Dow Corning Fire Stop Sealant or as approved. Apply in accordance with manufacturer's recommendations.

2.14 Studs

A. Use only 2" x 4" fire-rated CDX or metal studs.

2.15 Supplied Air System

A. At all times, air supplied to the type "C" respirators shall be Grade "D" Breathable Air as described by OSHA Regulation 29 CFR 1910.134(d)(1), containing less than the following:

Carbon Monoxide:	20 parts per million
Carbon Dioxide:	1,000 parts per million
Condensed Hydrocarbons:	5 milligrams per cubic centimeter
Objectionable odors:	None

B. Provide a minimum of one (1) hour of reserve air for emergency evacuation. Post, in the Work Zone, emergency evacuation procedures to be followed in the event of breathing air system failure. Explain procedures to all workers prior to commencement of the Work.

C. Water content shall be less than 66 parts per million in order to protect the air purification unit. Certify the air quality of the system prior to beginning asbestos abatement Work and every two weeks during asbestos abatement Work by an independent laboratory certified by the American Board of Industrial Hygiene. Collect samples under the supervision of a Certified Industrial Hygienist. Submit copies of certified test results to the Engineer within five (5) days of the sample collection.

2.16 Vacuums

A. Use only vacuums equipped with HEPA filters.

2.17 Wetting Agents

A. The wetting agent shall be water amended with one (1) oz. of a chemical surfactant per five (5) gallons of water. The composition of the surfactant shall be approximately 50% polyoxyethylene ether and 50% polyoxyethylene esters.

- END OF PART 2 -

PART 3 - EXECUTION

3.01 Personnel Protection

A. Satisfy all applicable Worker protection requirements.

B. Provide protective equipment for use by Workers and designated representatives of the Owner including disposable full body coveralls, respirators and approved cartridges, gloves, hard hats, and goggles. Maintain on site, two (2) sets of protective equipment for the exclusive use of representatives of the owner.

C. At all times, provide all persons with personally issued and marked respiratory equipment suitable for the asbestos exposure level in the Work Zone. Ensure that all persons properly use this equipment at all times.

D. As a minimum, half face negative pressure type respirators must be worn by all personnel during Work Zone preparation. If airborne concentrations of asbestos inside the Work Zone exceed 0.1 fibers per cubic centimeter, employ either PAPR or type "C" respiratory protection whichever is appropriate.

E. PAPRs (Powered Air Purifying Respirators) shall constitute the minimum level of respiratory protection for all persons entering that Work Zone from the time the Work Zone is activated until acceptance.

F. Should airborne concentrations of asbestos inside the Work Zone exceed 2.0 fibers per cubic centimeter, supply all personnel with personally issued and marked Type "C" supplied air respirators operated in the positive pressure demand mode.

G. If the permissible respirators fail to provide sufficient protection against volatile substances emitted by any sealants or other chemicals used, the services of a certified industrial hygienist will be procured, at the Contractor's expense, to determine proper respiratory protection. The Owner will not be liable for the cost of increased respiratory protection.

H. Maintain surveillance of heat stress conditions in the Work Zone. The prevailing Threshold Limit Values (TLVs) for heat stress and the method of heat stress measurement adopted by the American Conference of Governmental Industrial Hygienists (ACGIH) shall govern worker exposure to heat stress.

3.02 Decontamination

A. Construct and operate the Personnel and Waste Decontamination Enclosure Systems in conformance with all applicable rules and regulations. Locate decontamination units outside of the Work Zone.

B. Construct the Personnel Decontamination Enclosure System (PDES) as a series of six (6) completely enclosed and connected rooms: an Airlock, an Equipment Room, a second Airlock, a Shower, a third Airlock, and a Clean (locker) Room. Separate rooms with curtained doorways.

1. Ensure that all egress from the Work Zone is through the PDES.

2. Ensure that all persons leaving the Work Zone vacuum themselves of asbestos in the Work Zone and disrobe in the Equipment Room, shower (including washing of hair) with respirator on, and redress in the Clean Room.

3. Ensure that all persons entering the Work Zone wear clean and new protective clothing and equipment prior to entrance.

4. Equip the Shower with hot and cold water adjustable at the tap, liquid soap, shampoo and disposable towels.

5. Leave all contaminated clothing and equipment in the Equipment Room in barrels or bags. Sanitize respirators in the showers. Equip with fresh cartridges in the Clean Room.

6. No more than one curtained doorway shall be opened at the same time.

C. Remove all asbestos containing waste materials, equipment, or any other materials through the Waste Decontamination Enclosure System (WDES). The WDES shall consist of a series of four (4) completely enclosed and connected rooms: an Airlock, a Washroom, a second Airlock, and a Holding Area. Separate rooms with curtained doorways. Remove materials, waste and equipment as follows:

1. No more than one curtained doorway shall be opened at the same time.

2. Before removing any equipment or asbestos from the Work Zone,

   a. Containerize (or bag) all asbestos;

   b. Wet clean all equipment and packaged asbestos.

3. Place equipment and asbestos in the first Airlock. Workers in the Work Zone shall not enter the Airlock and the Curtained Doorway between the Airlock and the Washroom shall remain closed during this procedure.

4. Uncontaminated Workers in clean new protective equipment shall enter the WDES from outside the Work Zone and enter the Washroom.

5. While in the Washroom:

   a. Remove Waste and Equipment from the first Airlock;

   b. Wet clean all equipment and all packaged asbestos containing waste;

   c. Place bags and other containers into an additional completely clean bag or wrap in plastic. Bags and plastic used for this purpose shall not enter the Work Zone;

   d. Place equipment and asbestos in the second Airlock. Workers in the Work Zone shall not enter the Airlock and the Curtained Doorway between this Airlock and the Holding Area shall remain closed during this procedure.

6. Uncontaminated Workers in clean new protective equipment shall enter the Holding Area from the outside area and remove containerized materials from the airlock.

7. All workers shall proceed into the Work Zone for exiting by way of the PDES. Ensure that personnel do not leave the Work Zone through the WDES.

3.03 Work Zone Preparation

A. Electrical Power: Unless otherwise indicated, shut down all electric power within the Work Zone, as follows:

1. Lock all circuits, which have been shut off, in the off position and label with a printed tag which reads as follows:

"TEMPORARY DISCONNECT
Due to Asbestos Removal Project
DO NOT ACTIVATE THESE CIRCUITS"

2. Provide temporary power and lighting and ensure safe installation of temporary power sources and equipment per applicable electrical code requirements. Provide all equipment which must remain operable, as well as all temporary ground-fault interrupter circuits for lights and electrical equipment. Individually protect all power equipment used inside each Work Zone with in-line ground fault interrupters. Locate ground-fault interrupter outside of the Work Zone.

3. Provide all electrical tie-ins and extensions. Provide a temporary panel board, connected to an electric panel designated by the Owner.

B. Heating Ventilation and Air Conditioning (HVAC): Employ all means necessary to prevent contamination and fiber dispersal to other areas of the structure, as follows:

1. Thoroughly clean all HVAC Equipment and ductwork in the Work Zone. Seal all vents within the Work Zone with tape and plastic. Seal all HVAC duct seams. Wrap all ductwork in two (2) layers of plastic.

2. Remove all HVAC filters. Pack disposable filters in sealable double plastic bags for disposal at the approved landfill. Replace with new filters after final cleanup. Wet-clean permanent filters; reinstall after final cleanup.

3. Remove all heating and ventilating equipment grills, diffusers, returns, and other items located on the asbestos bearing surfaces. Wet clean all such items, seal in two (2) layers of plastic and remove from the Work Zone. Reinstall all displaced items after satisfactory clearance air testing.

4. HVAC systems shall be treated as follows:

a. Unless otherwise indicated, shutdown and lockout all heating, ventilating and air conditioning systems. Isolate system at points of entry to the Work Zone; use two (2) layers of plastic.

b. In cases where the HVAC system serving the Work Zone also serves other areas of the building which must remain in operation,

i. Isolate the ductwork entering the Work Zone from the remainder of the system. Cap all ductwork where it passes in or out of the Work Zone with galvanized steel ASTM 5261 in accordance with SMACNA HVAC Duct Construction Standards. Cover with two (2) layers of plastic.

ii. Operate the affected HVAC system twenty-four (24) hours per day from the initiation of Work Zone activation until successful final air clearance. Maintain a positive pressure within the operational portion of the HVAC system of 0.05 inch water gauge or greater with respect to the ambient pressure outside of the Work Zone. Install pressure monitoring devices.

c. In cases where it is necessary for ductwork passing through the Work Zone to remain active, the following conditions are to be maintained:

i. Maintain a positive pressure within the HVAC system of 0.05 inch water gauge (or greater) with respect to the ambient pressure outside of the Work Zone: the conditions for this system shall be maintained and be operational twenty-four (24) hours per day from the initiation of Work Zone preparation until successful final air clearance.

ii. Test, inspect and record the positive pressure in the duct both at the beginning and at the end of each shift.

iii. Monitor the positive pressurization of the duct using instrumentation that will trigger an audible alarm, if the static pressure falls below the set value.

iv. Place the supply air fan and the supply air damper for the active positive-pressurized duct in the manual "on" position to prevent shutdown by fail safe mechanisms.

v. Shut down and lock out the return air fan and the return air dampers.

vi. Cover all active HVAC ducts that pass through the Work Zone with two (2) layers of plastic.

C. Steam Systems: Unless otherwise noted on the Drawings, shut down all steam systems passing through the Work Zone prior to activation.

D. Utilities: Provide all water, electrical and waste facility connections, as well as all sanitary drains. The Contractor will not be charged for water used, electricity consumed, or discharges made to sanitary sewers as a part of this project.

E. Temporary Service Lines: Upon completion of abatement activities, remove all temporary service lines and restore to their original conditions, in a manner acceptable to the Engineer. Repair any part of the permanent service lines, equipment and building facilities disturbed or damaged as a result of the installation or removal of the temporary service lines.

F. Temporary Heating: Provide temporary heating in the Work Zone, as needed to maintain a minimum temperature of 50°F. Heating equipment shall be approved by the Engineer.

G. Movable Objects: Before Work is initiated, clean all items which can be removed without disrupting any asbestos material. Pre-clean movable objects within the proposed areas using HEPA filtered vacuum equipment an/or wet cleaning methods as appropriate; remove such objects from Work Zones to a temporary location, as directed by the Engineer.

H. Fixed Objects: Pre-clean non-removable objects within the proposed Work Zones, using HEPA filtered vacuum equipment and wet cleaning methods as appropriate prior to abatement activities, and enclose with two (2) layers of plastic sealed with tape.

I. Openings: Prior to placing plastic on walls, floors and ceilings, seal off all openings, including, but not limited to corridors, doorways, windows, skylights, ducts, grills, diffusers, and any other penetrations of the Work Zones, with two (2) layers of plastic sealed with tape.

J. Floor, Wall and Ceiling Penetrations: Prior to any abatement activities fire stop all openings or penetrations that have not already been sealed. This includes both empty holes, expansion joints and holes accommodating items such as cables, pipes, ducts, conduit, etc.

K. Fire Exits: Maintain emergency and fire exits from the Work Zones, or establish alternative exits satisfactory to the local fire officials. Provide panic exit devices for security and egress. Establish this exit in accordance with all applicable codes and regulations.

L. Signs: Outside of the perimeter barrier and at all entrances and exits to the Work Zone, post signs in English, Spanish and any other language spoken at the project location.

1. The signs shall read:

DANGER
ASBESTOS

CANCER AND LUNG DISEASE HAZARD

Authorized Personnel Only

Respirators and Protective Clothing are Required In This Area

2. Demarcate the regulated area. Post signs at such a distance from the area that an employee will read these signs before entering the area.

M. All of the above procedures shall be completed prior to the disturbance of any asbestos containing material.

3.04 Engineering Controls

A. Maintain the Work Zone at an air pressure that is lower than that in any surrounding space in the building, or at any location in the immediate proximity outside of the building envelope. This pressure differential when measured across any physical or critical barrier must equal or exceed a static pressure of 0.05 inches of water.

B. From the start of abatement activities:

1. Operate air filtration units continuously during the project, twenty-four (24) hours a day, from the start of abatement through successful clearance air monitoring, in accordance with "Specifications and Operating Procedures for the Use of Negative Pressure Systems for Asbestos Abatement", Guidance for Controlling Asbestos-Containing Materials in Buildings, EPA Report Number 560/5-85-024 (1985).

2. Install the air filtration units in quantities and locations as required in order to achieve the required negative pressure.

3. Provide a minimum of one air change every ten (10) minutes for the area under negative pressure. Assume Air Filtration Units will operate at 50% of their rated capacity. Maintain on site, one (1) spare air filtration unit for every five (5) in use.

4. Locate the exhaust unit(s) so that makeup air enters the Work Zone primarily through the Decontamination Systems and traverses the Work Zone as much as possible. Provide the specified number of air changes throughout the Work Zone. Place the end of the unit or its exhaust duct through an opening in the plastic barrier or wall covering. Seal the plastic around the unit or exhaust duct with tape.

5. Whenever possible, exhaust air filtration units to the outside of the building away from occupied areas in such a manner so that the air intake ports, louvers, or entrances for the building or adjacent buildings will not be adversely affected. In cases where it is impossible to exhaust outside of the building, provide a second air filtration unit in series. For runs longer than 150 feet install additional air filtration units every 150 feet.

6. Use ducting, of equivalent or larger dimension as that of the air filtration unit exhaust port, to exhaust to the outside of the structure. Ducts shall exhaust, at minimum fifty (50) feet from all intakes or entrances to the building or adjacent buildings. Seal and brace all ductwork. Maintain airtight joints. Prevent fiber release into uncontaminated building areas.

7. Place the air filtration system exhaust ducts overhead in an inconspicuous, non-restricting fashion. Connect the ducts to a 14" flange, as shown on the Drawings.

8. All filters shall be accessible from the Work Zone or contaminated side of the barrier. Prior to initial use, replace all filters in air filtration units in the presence of the Engineer with new and unused filters.

9. Use a dedicated power supply for the air filtration units.

10. In the event of loss of negative pressure or electric power to the negative pressure ventilating units, stop all abatement Work immediately. Do not resume Work until power is restored and negative pressure equipment is operational. Under no circumstances shall any Asbestos abatement take place without having the negative air pressure system fully operational.

11. When loss of negative pressure equipment lasts or is expected to last longer than one-half hour:

    a. Seal airtight all auxiliary make-up air inlets;

    b. Seal all Decontamination Systems airtight after the evacuation of all personnel from the Work Zone;

    c. All adjacent areas will be monitored by the Engineer at the Contractor's expense for asbestos fiber concentration.

12. Use ventilation smoke tubes to check the system performance.

13. Monitor and record the pressure differential between the Work Zone and the outside of the Work Zone with a monitoring device incorporating a continuous recorder (e.g. strip chart). Equip with an audible alarm which will signal if the pressure differential drops below 0.05 inches of water.

3.05 Asbestos Removal

Modified Tent Procedures (asbestos containing boiler lining)

Work in this part shall be performed in accordance with ICR 56.

The sequence of abatement activities shall be as follows:

A. Boiler Lining Abatement, Completely isolate the Work Zone as shown on the Drawings. Extend the Work Zone to such limits as to permit the removal of all asbestos containing materials within the Work Zone. Isolate the Work Zone as follows:

1. All tent enclosures and contiguous spaces within a radius of 10 feet shall be roped off and regulated to allow only certified workers and authorized visitors to enter.

2. All modified tents shall be fully frame (including horizontally across the top, if applicable) with 2x3 (minimum) wood or metal studs spaced not more than 36 inch center-to-center vertically around all sides (except at the entry/exit which shall not exceed 36 inch width); and

3. A minimum of one air volume change per 15 minutes through the modified tent shall be maintained.

4. Construct a decontamination unit that is attached to the tent comprised of a shower room and a clean room, with one curtained doorway separating them, and with a second curtained doorway separating the tent from the shower room.

5. After the ACM removal and bagging, the bagged waste shall be HEPA-vacuumed then wet cleaned and transferred into the airlock or into the shower room for double bagging and thereafter the double-bagged waste shall be transferred outside the airlock or outside the clean room for its final transfer to storage in a holding area and/or to legal means of disposal.

6. Allow a minimum of four (4) hour waiting (settling/drying) periods.

7. Upon completion of the final four (4) hour drying period, the Project Monitor, Air Monitor or Design Engineer shall inspect abatement locations for dryness and debris. All debris will be wetted, bagged and disposed of accordingly. Clearance air tests may be performed once abatement areas are inspected and determined to be dry and free of debris.

8. In the event of an unsatisfactory clearance air test results, abatement areas shall be recleaned, a new four (4) hour settling period observed and tests rerun.

3.06 Encapsulation

A. Apply Encapsulating material using an airless sprayer. Comply with manufacturer's recommendations. The Encapsulating material shall be mixed with contrasting color paint to assure proper application.

3.07 Disposal Practices

A. Wet and properly package all Asbestos prior to removal from the Work Zone via the Waste Decontamination Enclosure System. Remove all residual asbestos from the exterior of any package, drum, bag, or other container of Asbestos prior to removal from the Work Zone. Affix the ASBESTOS CAUTION label, the name of the Owner, the name of the Contractor, the name of any Tenant and the location where generated to all packages, drums, bags or other containers used for Asbestos disposal.

B. Store all Asbestos Waste in a totally secure manner. Transport all Asbestos Waste to the disposal site within seven (7) days after completing the Work of this section or thirty (30) days after removal, whichever comes first.

C. Transport Asbestos Waste through the building at the direction of the Engineer at times designated by the Owner. Use sealed carts.

D. During the transport of Asbestos Waste, on or across public thoroughfares, employ a hauler bearing all required permits for the hauling of asbestos. The haulers shall carry insurance in the same types and amounts as the Contractor. In addition, the hauler shall carry "Sudden and Accidental Pollution Liability Insurance in an amount not less than $1,000,000.

E. Dispose of Asbestos Waste at approved landfill bearing all appropriate licenses and permits for asbestos disposal and operated in compliance with all applicable rules and regulations. The Landfill used shall be dedicated for asbestos materials only and shall not accept any other hazardous substances.

F. Within thirty (30) days of removal from the premises, the Contractor shall provide the Owner with disposal certificate(s) from the approved waste disposal site. Final payment will not be approved until all disposal certificates have been provided.

3.08 Clean-up Procedures

A. Daily, during abatement activities:

1. Clean-up visible accumulations of loose Asbestos Waste whenever a sufficient amount of Asbestos Containing Material to fill a single asbestos waste bag has been removed. Removal all waste materials from the Work Zone at the end of each work shift. Maintain visible material wet until after clean up.

2. Place visible accumulations of Asbestos Waste in containers utilizing non-metallic dust pans and non-metallic squeegees or vacuums.

3. Do not use metal shovels.

4. Wet clean and vacuum all surfaces of the Work Zone on a daily basis.

5. Upon completion of waste removal, wet clean the WDES twice. When the PDES Shower Room alternates as a Washroom, wash the Shower Room immediately with cloths or mops saturated with a detergent solution prior to wet cleaning.

6. Wet clean and vacuum the WDES as appropriate, as a minimum after each shift change and meal break.

7. If excess water accumulates in the Work Zone, stop Work until the water is collected and disposed of properly.

8. If Asbestos Waste is spilled in an elevator shaft:

   a. Immediately evacuate, shut down and isolate all of the elevators in the affected elevator bank.

   b. Place all spilled visible accumulations of Asbestos Waste in clean and unused containers.

   c. Vacuum and wet clean all of the contaminated surfaces in the elevator car and shaft in repetitive cycles until clearance air levels are achieved in the car and at each terminus of the shaft.

B. Final Clearance, The Work Zone will be considered acceptable when it has passed both visual inspections and air testing performed by the Engineer according to the criteria and sequence below:

1. In order to pass each of the visual inspections, the Work Zone and adjacent areas shall be free of all visually apparent asbestos. Any disputes over the results of any visual inspection shall be resolved by the Contractor submitting the results of bulk sample analysis demonstrating the contents of the material in question. Remove all Asbestos materials and all

asbestos contaminated materials; non-asbestos materials may remain. The laboratory performing such analyses shall be a regular participant in the ELAP Quality Assurance Program for bulk sample analyses with performance results satisfactory to the Engineer. The Engineer reserves the right to independently verify the bulk results.

2. If the Work Zone is not suitable for acceptance for any reason, promptly perform the Work requested by the Engineer.

3. Keep each Work Zone isolated and posted with ASBESTOS CAUTION and CAUTION KEEP OUT signs until after acceptance.

4. Typical acceptance sequence shall be as follows:

   a. After removal of visible accumulations of Asbestos Waste, vacuum all surfaces;

   b. Remove all bagged materials from the Work Site;

   c. Wet clean and vacuum all objects and surfaces in the Work Zone;

   d. Visual inspection by the Engineer;

   e. Encapsulate all plastic within the Work Zone limits, do not encapsulate surfaces from which asbestos was removed;

   f. Remove, bag, and remove from the Work Site the first layer of plastic;

   g. Vacate the Work Zone for four (4) hours;

   h. Wet clean and vacuum all objects and surfaces in the Work Zone for a second time;

   i. Visual inspection by the Engineer;

   j. Vacate the Work Zone for four (4) hours;

   k. Remove, bag and remove from the Work Site the second layer of plastic;

   l. Wet clean and vacuum all surfaces in the Work Zone for a third time;

   m. Vacate the Work Zone for four (4) hours;

   n. Visual inspection by Engineer to verify the absence of Asbestos Waste, dust and or debris;

   o. Clearance Air Monitoring;
   Clearance air monitoring shall consist of five air samples taken inside of the work area and five air samples taken outside of the work area.

   p. Upon successful clearance air testing, encapsulate surfaces from which Asbestos was removed;

q. Wait for encapsulant to dry;

r. Final Acceptance will be granted provided that items a thru n have been met to the satisfaction of the Engineer;

s. Shut down air filtration units (demobilization);

t. Remove the isolation barriers in conjunction with the use of HEPA vacuums;

u. After all Work and decontamination is complete, relocate and secure objects moved to temporary locations in the course of the Work to their former positions and assure that they are in working order.

END OF PART 3 -
- END OF SECTION 02081 -

ENVIRONMENTAL CONSULTING AND TECHNICAL SERVICES

Limited Asbestos Survey

PROJECT #:
258.19.14

DATE:
June 22, 2020

CLIENT:
Fuller D'Angelo P.C.
45 Knollwood Road
Elmsford, NY 10523

LOCATION:
Yonkers Public School
Westchester Hills School 29
47 Croydon Road
Yonkers New York 10710

PROJECT COMPLETION DATE:
June 12, 2020

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LIMITED ASBESTOS SURVEY
Yonkers Public School, Westchester Hills School 29, 47 Croydon Road, Yonkers, N.Y. 10710

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LIMITED ASBESTOS SURVEY
Yonkers Public School, Westchester Hills School 29, 47 Croydon Road, Yonkers, N.Y. 10710

I. INTRODUCTION

Warren & Panzer Engineers, P.C. (Warren Panzer) at the request of Fuller D'Angelo P.C. (Client), was contracted to perform a limited survey for the presence of **Asbestos Containing Materials (ACM)** at the Yonkers Public School, Westchester Hills School 29 located at 47 Croydon Road, Yonkers, NY 10710 for the Bathroom Renovation and Window and Boiler Replacement Project.

The hazardous materials inspection was conducted by licensed NYS Asbestos Inspector (See Appendix B for personnel & company licenses) on February 20, 2020 & June 12, 2020 and involved visual examinations and sampling of suspect materials that may be impacted by the window Replacement, Masonry & Site improvement project (See Appendix A for sample locations, type of materials and analytical results).

Asbestos Containing Material (ACM)

The results of the limited asbestos survey conducted on the window, convector units inside class rooms and ventilator areas of the lower and upper floors of the Family School 32, 1 Montclair Place, Yonkers, NY, indicate there are ACMs that will be disturbed. The purpose of this investigation was to assess if building components being impacted by the planned renovations contain asbestos. During the site visit, designated areas were inspected for suspect asbestos containing materials (i.e. Window Glazing, grout, mastic, caulk, etc.) and sampled accordingly. Warren & Panzer Engineers visited the site on February 20, 2020 & June 12, 2020.

To determine the presence of asbestos, bulk samples were collected from representative suspect homogeneous areas. A total of twenty-two (22) bulk samples were collected on February 20, 2020 & eighty (80) samples were collected on June 12, 2020 and analyzed for asbestos. All bulk samples were analyzed by Polarized Light Microscopy (PLM) with dispersion staining as described by the Interim Method of the Determination of Asbestos in Bulk Insulation, Federal Register/Volume 47, No. 103/May 27, 1982. It should be noted that some ACM may not be accurately identified and/or quantified by PLM. As an example, the original fabrication of non-friable organically bound (NOB) materials, such as vinyl floor tile materials, routinely involved milling of asbestos fibers to extremely small sizes. As a result, these fibers may go undetected under the standard PLM method. Under these circumstances, ATC (10879) & ALLAB (ELAP 12118) conducted additional bulk sample analysis via Transmission Electron Microscopy (TEM), which is required under applicable State of New York regulations for a more definitive analysis of NOB materials whenever PLM results are inconclusive.

Asbestos Survey

The asbestos survey involved a visual examination and sampling of suspect materials that may be impacted by the window replacement project, Masonry & site improvement. Inspections were conducted on 2 separate occasions, inspection conducted on February 20, 2020 was limited, According to SOW was provided by client only windows were being replaced. Full set

of drawing was received on later date and upon revision SOW was different than what was provided initially. On June 12, 2020 inspector conducted inspection as per new drawings provided by client in which window replacement, Masonry & site improvement work is being performed.

As per New York State Regulations, materials which may contain asbestos, identified as "suspect materials", were collected for this survey. Materials which are considered suspect include a wide variety of surfacing, thermal systems, insulation materials, and miscellaneous type of materials. A survey of this nature intends to identify what types and where confirmed asbestos containing materials are located, on a location by location basis. Suspect ACM's that appear similar in age, color and texture were grouped together in what are identified as "homogenous areas" and sampled accordingly. A more technical description of sampling and regulations is discussed below in Section II. This survey included the bulk sampling and collection of readily accessible materials using nondestructive sampling procedures. Inspection results are presented in Appendix A (Summary of Asbestos Bulk Sample Locations). The presence of asbestos containing materials will impact a project because all ACM will have to be abated prior to commencement of other work. Abatement will precede all other construction phases. The specification and design phase will include a more detailed description of such procedures and methods.

According to the EPA regulations, ASHARA Requirement to Public & Commercial Buildings, New York State Industrial Code 56, OSHA Regulations and NIOSH recommendations, asbestos containing materials must be removed prior to disturbance during renovation activities. A qualified, professional asbestos abatement contractor should be retained to remove the asbestos-containing materials if demolition or disturbances of the materials are likely through the renovation activities. It is recommended that specifications or a work plan for the removal of the asbestos containing materials be developed to assist in the abatement bidding as it related to the phasing of the project. In conjunction with the asbestos abatement, project air monitoring should be performed to document that proper work practices and applicable OSHA, ASHARA and EPA regulations are followed.

II. FIELD PROCEDURES AND ANALYSIS METHODOLOGY

Analytical Method for Asbestos

Guidelines used for the inspection were established by the Environmental Protection Agency (EPA) in the Guidance for Controlling Asbestos Containing Materials in Buildings, Office of Pesticides and Toxic Substances, DOC #560/5-85-024, and 40 CFR Part 763, Subpart E.

Field information was organized as per the Asbestos School Hazard Abatement Reauthorization Act (AHERA) concept of homogenous area (HA). That is, suspect ACM's that appear similar in age, color and texture were grouped together, sampled, and assessed for condition.

For the purposes of this inspection, suspect ACM has been placed in three material categories: thermal system insulation, surfacing and miscellaneous.

Surfacing materials are those that are sprayed-on, troweled-on or otherwise applied to surfaces for fireproofing, acoustical, or decorative purposes (e.g., wall/ ceiling plaster, spray-on fireproofing, etc.).

Thermal materials are those applied to heat pipes or other structural components to prevent heat loss or gain or prevent water condensation (e.g., pipe and fitting insulation, duct insulation, boiler flue, etc.).

Miscellaneous materials are interior building materials on structural components, structural members, or fixtures, such as floor and ceiling tiles, etc. and do not include surfacing material or thermal system insulation.

Bulk samples of suspect ACM were analyzed by Polarized Light Microscopy (PLM) with dispersion staining, as described in 40 CFR Part 763 and the National Emissions Standard for Hazardous Air Pollutants (NESHAPs).

The New York State Department of Health revised the PLM Stratified Point Counting Method in 1992. The new method, "Polarized Light Microscopy Methods for Identifying and Quantitating Asbestos in Bulk Samples" can be found as item 198.1 in the ELAP Certification manual.

The State of New York Environmental Laboratory Approval Program (ELAP) has determined that analysis of non-friable organically bound materials (NOB's) is not reliably performed by PLM. Therefore, if PLM yields negative results for a non-friable material, it must be confirmed by Transmission Electron Microscopy (TEM).

All samples were initially analyzed by Polarized Light Microscopy. Analysis of PLM bulk samples taken by Warren Panzer representatives was performed by WKP Laboratories located at 228

East 45th Street, NY for analysis. WKP's laboratory is accredited by the New York State Department of Health (ELAP No.12012).

III. INSPECTION RESULTS

Asbestos (ACM) Inspection Results

February 20, 2020

Homogenous Material	Location	Material	Asbestos Content
01-01	Basement – Boiler Room, Boiler 1	Boiler Cement Patch	NAD
01-02	Basement – Boiler Room, Boiler 2	Boiler Cement Patch	NAD
01-03	Basement – Boiler Room, Boiler 2	Boiler Cement Patch	NAD
01-04	Basement – Boiler Room, Flue to Boiler 2	Boiler Cement Patch	NAD
02-05	Basement – Boiler Room, Base Of Boiler 1	Brick Mortar	NAD
02-06	Basement – Boiler Room, Base Of Boiler 2	Brick Mortar	NAD
03-07	1st Floor – Women's Faculty Bathroom	Ceramic Floor Tile Grout (Configured Tile Shape)	NAD
03-08	1st Floor – Women's Faculty Bathroom	Ceramic Floor Tile Grout (Configured Tile Shape)	NAD
04-09	1st Floor – Men's Faculty Bathroom	Ceramic Floor Tile Grout (1Sq. In. Tiles))	NAD
04-10	1st Floor – Men's Faculty Bathroom	Ceramic Floor Tile Grout (1Sq. In. Tiles))	NAD
05-11	1st Floor – Women's Faculty Bathroom	Ceramic Wall Tile Grout	Chrysotile less than 1%
05-12	1st Floor – Women's Faculty Bathroom	Ceramic Wall Tile Grout	Chrysotile less than 1%
06-13	1st Floor Boys' Bathroom	4"x4" Ceramic Wall Tile Grout	NAD
06-14	1st Floor Girls' Bathroom	4"x4" Ceramic Wall Tile Grout	NAD
07-15	1st Floor Women's Faculty Bathroom	2'x4' Ceiling Tile	NAD
07-16	1st Floor Boys' Faculty Bathroom	2'x4' Ceiling Tile	NAD
08-17	**Exterior Windows – Along Connection**	**Exterior Window Caulk**	**Chrysotile 4.3%**
08-18	**Exterior Windows – Outside Room 22**	**Exterior Window Caulk**	**NA/PS**
08-19	**Exterior Windows – Outside Room 10**	**Exterior Window Caulk**	**NA/PS**
08-20	**Exterior Windows – Inner Court**	**Exterior Window Caulk**	**NA/PS**
09-21	Exterior Wall - Inner Court	Brick Mortar	NAD
09-22	Exterior Wall - Inner Court, Room 13	Brick Mortar	NAD

LIMITED ASBESTOS SURVEY

Yonkers Public School, Westchester Hills School 29, 47 Croydon Road, Yonkers, N.Y. 10710

June 12, 2020

Homogenous Material	Location	Material	Asbestos Content
1-1	**Old Building -Exterior Door, By Classroom 8**	**Door Caulking**	**Chrysotile 4.6%**
1-2	**Old Building – Exterior Door, By Classroom 24**	**Door Caulking**	**NA/PS**
1-3	**Old Building – Exterior Door, By Staff Lounge**	**Door Caulking**	**NA/PS**
2-4	**Old Building – Exterior, Kitchen**	**Window Glazing**	**Anthophyllite 2.0%**
2-5	**Old Building – Exterior, Classroom 2**	**Window Glazing**	**NA/PS**
2-6	**Old Building – Exterior, Classroom 6**	**Window Glazing**	**NA/PS**
3-7	**Old Building – Exterior, By Classroom 12**	**Tar Above Vents**	**Chrysotile 20.0%**
3-8	**Old Building – Exterior, By Classroom 16**	**Tar Above Vents**	**NA/PS**
4-9	New Building – Exterior, By Grade 1 Classroom	Tar Above Vents	NAD
4-10	New Building – Exterior, Office	Tar Above Vents	NAD
5-11	New Building – Exterior, By Special Ed. Classroom	Door Mortar	NAD
5-12	New Building – Exterior, By OT/FT	Door Mortar	NAD
6-13	New Building – Grade 3 Classroom	Window Glazing	NAD
6-14	New Building – Teacher W'S Lounge	Window Glazing	NAD
7-15	Classroom 23	Black Mastic Under 9"x9" Floor Tile	NAD
7-16	Classroom 21	Black Mastic Under 9"x9" Floor Tile	NAD
7-17	**Classroom 23**	**Light Brown 9"x9" Floor Tile**	**Chrysotile 10.0%**
7-18	**Classroom 21**	**Light Brown 9"x9" Floor Tile**	**NA/PS**
8-19	Classroom 24	Black Mastic Under 9"x9" Floor Tile	NAD
8-20	Classroom 22	Black Mastic Under 9"x9" Floor Tile	NAD
8-21	**Classroom 24**	**Green 9"x9" Floor Tile**	**Chrysotile 9.5%**
8-22	**Classroom 22**	**Green 9"x9" Floor Tile**	**NA/PS**
9-23	**Classroom 20**	**Black Mastic Under 9"x9" Floor Tile**	**Chrysotile 5.0%**
9-24	**Classroom 18**	**Black Mastic Under 9"x9" Floor Tile**	**NA/PS**
9-25	**Classroom 20**	**Gray 9"x9" Floor Tile**	**NA/PS**
9-26	**Classroom 18**	**Gray 9"x9" Floor Tile**	**NA/PS**

LIMITED ASBESTOS SURVEY

Yonkers Public School, Westchester Hills School 29, 47 Croydon Road, Yonkers, N.Y. 10710

Homogenous Material	Location	Material	Asbestos Content
10-27	**Classroom 17**	**Red 9"x9" Floor Tile**	**Chrysotile 15.5%**
10-28	**Classroom 11**	**Red 9"x9" Floor Tile**	**NA/PS**
11-29	**Classroom 10**	**Black 9"x9" Floor Tile**	**Chrysotile 15.5%**
11-30	**Classroom 8**	**Black 9"x9" Floor Tile**	**NA/PS**
12-31	Classroom 8	Slate	NAD
12-32	Classroom 13	Slate	NAD
13-33	Classroom 8	Slate Grout	NAD
13-34	Classroom 13	Slate Grout	NAD
14-35	Classroom 8	CMU Mortar	NAD
14-36	By Women's Faculty Bathroom	CMU Mortar	NAD
14-37	By Men's Faculty Bathroom	CMU Mortar	NAD
15-38	By Kitchen	Wall Plaster – White Coat	NAD
15-39	Classroom 7	Wall Plaster – White Coat	NAD
15-40	Classroom 6	Wall Plaster – White Coat	NAD
15-41	Classroom 1	Wall Plaster – White Coat	NAD
15-42	Classroom 2	Wall Plaster – White Coat	NAD
16-43	By Kitchen	Wall Plaster – Brown Coat	NAD
16-44	Classroom 7	Wall Plaster – White Coat	NAD
16-45	Classroom 6	Wall Plaster – White Coat	NAD
16-46	Classroom 1	Wall Plaster – White Coat	NAD
16-47	Classroom 2	Wall Plaster – Brown Coat	NAD
17-48	**Classroom 5**	**Black Mastic Under 12"x12" Floor Tile**	**Chrysotile 2.6%**
17-49	**Classroom 2**	**Black Mastic Under 12"x12" Floor Tile**	**NA/PS**
18-50	**Classroom 5**	**Green 12"x12" Floor Tile**	**Chrysotile 17.4%**
18-51	**Classroom 2**	**Green 12"x12" Floor Tile**	**NA/PS**
19-52	**Classroom 7**	**White 12"x12" Floor Tile**	**Chrysotile 17.0%**
19-53	**Classroom 6**	**White 12"x12" Floor Tile**	**NA/PS**
20-54	**Classroom 4**	**Black 12"x12" Floor Tile**	**Chrysotile 3.1%**
20-55	**Classroom 3**	**Black 12"x12" Floor Tile**	**NA/PS**
21-56	Classroom 6	Yellow Floor Tile	NAD
21-57	Classroom 2	Yellow Floor Tile	NAD
22-58	1st floor – Corridor	2'x4' Ceiling Tile	NAD
22-59	1st floor – Corridor	2'x4' Ceiling Tile	NAD
23-60	By Security Office	Pipe Canvas	NAD
23-61	By Teacher W/S	Pipe Canvas	NAD
23-62	By Kitchen	Pipe Canvas	NAD

LIMITED ASBESTOS SURVEY

Yonkers Public School, Westchester Hills School 29, 47 Croydon Road, Yonkers, N.Y. 10710

Homogenous Material	Location	Material	Asbestos Content
24-63	By Security Office	2'x4' Ceiling Tile	NAD
24-64	By Teacher W/S	2'x4' Ceiling Tile	NAD
25-65	Classroom 20	Brown Cove Base Mastic	NAD
25-66	Dining Area	Brown Cove Base Mastic	NAD
26-67	Classroom 20	Black Cove Base	NAD
26-68	Dining Area	Black Cove Base	NAD
27-69	**Women's Faculty Bathroom**	**Ceramic Tile Glue**	**Chrysotile 1.7%**
27-70	**Men's Faculty Bathroom**	**Ceramic Tile Glue**	**NA/PS**
28-71	Girls Bathroom	Board Attached to Ceiling	NAD
28-72	Men's Faculty Bathroom	Board Attached to Ceiling	NAD
29-73	Exterior – By Classroom 12	Exterior Caulking Around Vents	NAD
29-74	Exterior – By Classroom 16	Exterior Caulking Around Vents	NAD
30-75	Dining Area	12"x12" Floor Tile Glue	NAD
30-76	Dining Area	12"x12" Floor Tile Glue	NAD
30-77	Dining Area	Gray 12"x12" Floor Tile Glue	NAD
30-78	Dining Area	Gray 12"x12" Floor Tile Glue	NAD
31-79	1st Floor	Duct Sealant	NAD
31-80	1st Floor	Duct Sealant	NAD

NAD: NO ASBESTOS DETECTED
NAD-NVD: NO ASBESTOS DETECTED-NO VERMICULITE DETECTED
NA/PS: NOT ANALYZED POSITIVE STOP
BOLD: ASBESTOS-CONTAINING MATERIAL

IV. FINDINGS AND RECOMMENDATIONS

The results of the visual inspection and bulk sample analysis determined that the following materials are ACM:

February 19, 2020

- **Exterior Window Caulk – Exterior Windows: Along the Connection, Outside Rooms 22 and 10, and in the Inner Court.**

June 12, 2020

- **Door Caulking – Old Building, Exterior Door by Staff Lounge, Classrooms 8 and 24.**
- **Window Caulking – Old Building – Exterior: Kitchen, Classroom 2 and 6.**
- **Tar Above Vents – Old Building – Exterior: By classrooms 12 and 16.**
- **Light Brown 9"x9" Floor Tile – Classrooms 21 and 23.**
- **Green 9"x9" Floor Tile – Classrooms 22 and 24.**
- **Black Mastic Under 9"x9" Floor Tile – Classrooms 18 and 20.**
- **Red 9"x9" Floor Tile – Classrooms 11 and 17.**
- **Black 9"x9" Floor Tile – Classrooms 8 and 10.**
- **Black Mastic Under 12"x12" Floor Tile – Classrooms 2 and 5.**
- **Green 12"x12" Floor Tile – Classrooms 2 and 5.**
- **White 12"x12" Floor Tile – Classroom 6 and 7.**
- **Black 12"x12" Floor Tile – Classroom 3 and 4.**
- **Ceramic Tile Glue – Women's and Me's Faculty Bathrooms.**

We recommend abating the material that came back positive. See appendix (E) for all Asbestos Containing Material locations. There was no visible Drywall & Joint compound. Convector units did not have any visible suspect material. There is potential of ACM pipe insulation & associated fittings in bathroom pipe chases. In old building 2 x 4 ceiling tiles attached to the deck are same as ceiling tiles and are sampled and they do not contain asbestos. In new building ceiling deck is metal.

Appendix A contains copy of the laboratory reports and chain-of-custody forms for your records.

V. CONCLUSIONS

In the event, that identified ACMs are to be disturbed by renovation work, proper asbestos abatement procedures are required to be implemented prior to the commencement of such work. All asbestos abatement work must be performed in accordance with all applicable Federal, State and Local rules and regulations. A licensed abatement contractor must perform the removal of all friable and non-friable ACM.

VI. LIMITATIONS AND AREAS NOT ACCESSIBLE

Warren Panzer inspected and sampled materials, which were observable and accessible to the survey team. It is possible, however, that additional suspect materials may exist within interstitial space (i.e. underground chases, beneath pavement/asphalts pathways, etc.), which were not accessible or not made accessible and as a result not noted in this report.

If questions arise regarding asbestos in materials/locations that were not tested by Warren Panzer, then additional survey services should be procured to test these locations. Warren Panzer makes no representation or warranty concerning the standards and specifications provided in applicable regulations. Any materials that have not been tested and/or found during inspection must be assumed positive for asbestos.

We appreciate the opportunity to be of the service to Fuller D' Angelo P.C. Should you have any questions or require additional information, please contact our office.

Sincerely,

Usman Younas
Project Manager
NYS DOL Certified Asbestos Inspector / NYC DEP Certified Asbestos Investigator

Appendix A

Laboratory Reports & Chain of Custody Forms

WKP
LABORATORIES, INC.

BULK SAMPLE ANALYSIS REPORT
POLARIZED LIGHT MICROSCOPY

228 East 45th Street 2nd Floor
New York, NY 10017
Tel: (212) 922-0689
Fax: (212) 922-0630

Client:	Warren Panzer Engineers, PC	TURNAROUND TIME:	Standard
WKP File #:	501	DATE COLLECTED:	02/20/2020
WKP Log I.D. #:	2000236	DATE RECEIVED:	02/24/2020
Attention:	Greg Chomenko	ANALYSIS DATE:	02/24/2020
		REPORT DATE:	02/24/2020
Client Job:	258.19.14	REVISED:	
Charge Code:	258.19.14		
Location:	Yonkers Public Schools/ Westchester Hills School 29/ 47 Croydon Rd./ Yonkers, NY	COLLECTED BY:	R. Treglio/J. Sanmartin

SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
01-01	2000236-001	Boiler Cement Patch, Basement - Boiler Room, Boiler 1, Friable, Light Gray, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected		Mineral Wool	25%	Non-Fibrous Material	75%
			Total % Asbestos:	No Asbestos Detected				
01-02	2000236-002	Boiler Cement Patch, Basement - Boiler Room, Boiler 2, Friable, Gray, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected		Mineral Wool	12%	Non-Fibrous Material	88%
			Total % Asbestos:	No Asbestos Detected				
01-03	2000236-003	Boiler Cement Patch, Basement - Boiler Room, Boiler 2, Friable, Beige, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected		Mineral Wool	15%	Non-Fibrous Material	85%
			Total % Asbestos:	No Asbestos Detected				
01-04	2000236-004	Boiler Cement Patch, Basement - Boiler Room, Flue To Boiler 2, Friable, Gray, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected		Mineral Wool	15%	Non-Fibrous Material	85%
			Total % Asbestos:	No Asbestos Detected				
02-05	2000236-005	Brick Mortar, Basement - Boiler Room, Base Of Boiler 1, Friable, Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
02-06	2000236-006	Brick Mortar, Basement - Boiler Room, Base Of Boiler 2, Friable, Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				

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SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
03-07	2000236-007	Ceramic Floor Tile Grout (Configured Tile Shape), 1st Floor - Women's Faculty Bathroom, Friable, Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
03-08	2000236-008	Ceramic Floor Tile Grout (Configured Tile Shape), 1st Floor - Women's Faculty Bathroom, Friable, Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
04-09	2000236-009	Ceramic Floor Tile Grout (1 Sq. In. Tiles), 1st Floor - Men's Faculty Bathroom, Friable, Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
04-10	2000236-010	Ceramic Floor Tile Grout (1 Sq. In. Tiles), 1st Floor - Men's Faculty Bathroom, Friable, Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
05-11	2000236-011	Ceramic Wall Tile Grout, 1st Floor - Women's Faculty Bathroom, Friable, White, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	Chrysotile	0.5%			Non-Fibrous Material	99.5%
			Total % Asbestos:	<1%				
05-12	2000236-012	Ceramic Wall Tile Grout, 1st Floor - Men's Faculty Bathroom, Friable, White, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	Chrysotile	0.5%			Non-Fibrous Material	99.5%
			Total % Asbestos:	<1%				

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SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
06-13	2000236-013	4"x4" Ceramic Wall Tile Grout, 1st Floor - Boys' Bathroom, Friable, White, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
06-14	2000236-014	4"x4" Ceramic Wall Tile Grout, 1st Floor - Girls' Bathroom, Friable, White, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
07-15	2000236-015	2'x4' Ceiling Tile, 1st Floor - Women's Faculty Bathroom, NOB, White/Light Gray, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
07-16	2000236-016	2'x4' Ceiling Tile, 1st Floor - Boys' Faculty Bathroom, NOB, White/Light Gray, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
08-17	2000236-017	Exterior Window Caulk, Exterior Windows - Along Connection, NOB, Brown, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.6.	Chrysotile	4.3%			Non-Fibrous Material	95.7%
			Total % Asbestos:	4.3%				
08-18	2000236-018	Exterior Window Caulk, Exterior Windows - Outside Room 22, NOB, Brown, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				

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Location:	Yonkers Public Schools/ Westchester Hills School 29/ 47 Croydon Rd./ Yonkers, NY	COLLECTED BY:	R. Treglio/J. Sanmartin

SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
08-19	2000236-019	Exterior Window Caulk, Exterior Windows - Outside Room 10, NOB, Tan, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				
08-20	2000236-020	Exterior Window Caulk, Exterior Windows - Inner Court, NOB, Tan, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				
09-21	2000236-021	Brick Mortar, Exterior Wall - Inner Court, Friable, Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
09-22	2000236-022	Brick Mortar, Exterior Wall - Inner Court, Room 13, Friable, Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				

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Attention:	Greg Chomenko	ANALYSIS DATE:	02/24/2020
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Charge Code:	258.19.14		
Location:	Yonkers Public Schools/ Westchester Hills School 29/ 47 Croydon Rd./ Yonkers, NY	COLLECTED BY:	R. Treglio/J. Sanmartin

SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)

ANALYSIS / ACCREDITATIONS: Bulk sample analysis by Polarized Light Microscopy, ELAP Method 198.1 and 198.6. NYS ELAP Laboratory ID # 12012 and NVLAP Lab Code 101950-0.

NOTES:

1. NAD denotes NO ASBESTOS DETECTED.
2. Percentages are calculated using the EPA equivalent Stratified Point-Count Method.
3. The samples in this report were not collected by WKP Laboratories, Inc.
4. This report relates only to the samples tested. It may not be used by the client to claim project endorsement by NVLAP, or any other agency of the U.S. government. The report, or certificate, shall not be reproduced, except in full, without the written approval of the laboratory.
5. All inhomogeneous layers of the bulk sample are analyzed separately.
6. PLM bulk samples will be disposed of after 3 months unless otherwise directed by client in writing.
7. * Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative TEM is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.
8. Quality control data (Including 95% confidence limits,laboratory / analysis accuracy and precision) is available upon request.
9. NY ELAP Item 198.6 does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite.
10. Microscope: PLM Microscope #2: Leica DM750P, S/N: 964001380UN0025

Sean Scales
Laboratory Analyst

Sean Scales
Laboratory Director

Report Prepared by:
Sean Scales

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WKP File #:	501	DATE COLLECTED:	06/12/2020
WKP Log I.D. #:	2000610	DATE RECEIVED:	06/15/2020
Attention:	Greg Chomenko	ANALYSIS DATE:	06/16/2020
		REPORT DATE:	06/17/2020
Client Job:	258.19.14	REVISED:	
Charge Code:	258.19.14		
Location:	Fuller & D'Angelo/ Yonkers Public Schools/ Westchester Hills School 29/ 47 Croydon Rd./ Yonkers, NY/ 1st Floor	COLLECTED BY:	Usman Younas

SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
1-1	2000610-001	Door Caulking, Old Building - Exterior Door, By Classroom 8, NOB, Tan, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6.	Chrysotile	4.6%			Non-Fibrous Material	95.4%
			Total % Asbestos:	4.6%				
1-2	2000610-002	Door Caulking, Old Building - Exterior Door, By Classroom 24, NOB, Tan, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				
1-3	2000610-003	Door Caulking, Old Building - Exterior Door, By Staff Lounge, NOB, Tan, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				
2-4	2000610-004	Window Glazing, Old Building - Exterior, Kitchen, NOB, Light Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6.	Anthophyllite	2.0%			Non-Fibrous Material	98.0%
			Total % Asbestos:	2.0%				
2-5	2000610-005	Window Glazing, Old Building - Exterior, Classroom 2, NOB, Light Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				
2-6	2000610-006	Window Glazing, Old Building - Exterior, Classroom 6, NOB, Light Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				

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Location:	Fuller & D'Angelo/ Yonkers Public Schools/ Westchester Hills School 29/ 47 Croydon Rd./ Yonkers, NY/ 1st Floor	COLLECTED BY:	Usman Younas

SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
3-7	2000610-007	Tar Above Vents, Old Building - Exterior, By Classroom 12, NOB, Black, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.6.	Chrysotile	20.0%			Non-Fibrous Material	80.0%
			Total % Asbestos:	20.0%				
3-8	2000610-008	Tar Above Vents, Old Building - Exterior, By Classroom 16, NOB, Black, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				
4-9	2000610-009	Tar Above Vents, New Building - Exterior, By Grade 1 Classroom, NOB, Black, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
4-10	2000610-010	Tar Above Vents, New Building - Exterior, Office, NOB, Black, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
5-11	2000610-011	Door Mortar, New Building - Exterior, By Special Ed. Classroom, Friable, Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
5-12	2000610-012	Door Mortar, New Building - Exterior, By OT/FT, Friable, Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				

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SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
6-13	2000610-013	Window Glazing, New Building - Grade 3 Classroom, NOB, Green/Black, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
6-14	2000610-014	Window Glazing, New Building - Teacher W/S Lounge, NOB, Green/Black, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
7-15	2000610-015	Black Mastic Under 9"x9" Floor Tile, Classroom 23, NOB, Black, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
7-16	2000610-016	Black Mastic Under 9"x9" Floor Tile, Classroom 21, NOB, Black, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
7-17	2000610-017	Light Brown 9"x9" Floor Tile, Classroom 23, NOB, Light Brown, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6.	Chrysotile	10.0%			Non-Fibrous Material	90.0%
			Total % Asbestos:	10.0%				
7-18	2000610-018	Light Brown 9"x9" Floor Tile, Classroom 21, NOB, Light Brown, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				

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BULK SAMPLE ANALYSIS REPORT
POLARIZED LIGHT MICROSCOPY

228 East 45th Street 2nd Floor
New York, NY 10017
Tel: (212) 922-0689
Fax: (212) 922-0630

Client:	Warren Panzer Engineers, PC	TURNAROUND TIME:	Standard
WKP File #:	501	DATE COLLECTED:	06/12/2020
WKP Log I.D. #:	2000610	DATE RECEIVED:	06/15/2020
Attention:	Greg Chomenko	ANALYSIS DATE:	06/16/2020
		REPORT DATE:	06/17/2020
Client Job:	258.19.14	REVISED:	
Charge Code:	258.19.14		
Location:	Fuller & D'Angelo/ Yonkers Public Schools/ Westchester Hills School 29/ 47 Croydon Rd./ Yonkers, NY/ 1st Floor	COLLECTED BY:	Usman Younas

SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
8-19	2000610-019	Black Mastic Under Green 9"x9" Floor Tile, Classroom 24, NOB, Black, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
8-20	2000610-020	Black Mastic Under Green 9"x9" Floor Tile, Classroom 22, NOB, Black, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
8-21	2000610-021	Green 9"x9" Floor Tile, Classroom 24, NOB, Green, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6.	Chrysotile	9.5%			Non-Fibrous Material	90.5%
			Total % Asbestos:	9.5%				
8-22	2000610-022	Green 9"x9" Floor Tile, Classroom 22, NOB, Green, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				
9-23	2000610-023	Black Mastic Under 9"x9" Floor Tile, Classroom 20, NOB, Black, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6.	Chrysotile	5.0%			Non-Fibrous Material	95.0%
			Total % Asbestos:	5.0%				
9-24	2000610-024	Black Mastic Under 9"x9" Floor Tile, Classroom 18, NOB, Black, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				

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SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
9-25	2000610-025	Gray 9"x9" Floor Tile, Classroom 20, NOB, Gray, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				
9-26	2000610-026	Gray 9"x9" Floor Tile, Classroom 18, NOB, Gray, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				
10-27	2000610-027	Red 9"x9" Floor Tile, Classroom 17, NOB, Red, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6.	Chrysotile	15.5%			Non-Fibrous Material	84.5%
			Total % Asbestos:	15.5%				
10-28	2000610-028	Red 9"x9" Floor Tile, Classroom 11, NOB, Red, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				
11-29	2000610-029	Black 9"x9" Floor Tile, Classroom 10, NOB, Black, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6.	Chrysotile	15.5%			Non-Fibrous Material	84.5%
			Total % Asbestos:	15.5%				
11-30	2000610-030	Black 9"x9" Floor Tile, Classroom 8, NOB, Black, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				

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SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
12-31	2000610-031	Slate, Classroom 8, Friable, Black, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
12-32	2000610-032	Slate, Classroom 13, Friable, Black, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
13-33	2000610-033	Slate Grout, Classroom 8, Friable, Light Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
13-34	2000610-034	Slate Grout, Classroom 13, Friable, Light Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
14-35	2000610-035	CMU Mortar, Classroom 8, Friable, Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
14-36	2000610-036	CMU Mortar, By Women's Faculty Bathroom, Friable, Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
14-37	2000610-037	CMU Mortar, Friable, Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				

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SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
15-38	2000610-038	Wall Plaster - White Coat, By Kitchen, Friable, White, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
15-39	2000610-039	Wall Plaster - White Coat, Classroom 7, Friable, White, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
15-40	2000610-040	Wall Plaster - White Coat, Classroom 6, Friable, White, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
15-41	2000610-041	Wall Plaster - White Coat, Classroom 1, Friable, White, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
15-42	2000610-042	Wall Plaster - White Coat, Classroom 2, Friable, White, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
16-43	2000610-043	Wall Plaster - Brown Coat, By Kitchen, Friable, Tan, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				

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SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
16-44	2000610-044	Wall Plaster - Brown Coat, Classroom 7, Friable, Tan, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
16-45	2000610-045	Wall Plaster - Brown Coat, Classroom 6, Friable, Tan, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
16-46	2000610-046	Wall Plaster - Brown Coat, Classroom 1, Friable, Tan, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
16-47	2000610-047	Wall Plaster - Brown Coat, Classroom 2, Friable, Tan, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected				Non-Fibrous Material	100%
			Total % Asbestos:	No Asbestos Detected				
17-48	2000610-048	Black Mastic Under 12"x12" Floor Tile, Classroom 5, NOB, Black, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6.	Chrysotile	2.6%			Non-Fibrous Material	97.4%
			Total % Asbestos:	2.6%				
17-49	2000610-049	Black Mastic Under 12"x12" Floor Tile, Classroom 2, NOB, Black, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				

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SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
18-50	2000610-050	Green 12"x12" Floor Tile, Classroom 5, NOB, Green, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6.	Chrysotile	17.4%			Non-Fibrous Material	82.6%
			Total % Asbestos:	17.4%				
18-51	2000610-051	Green 12"x12" Floor Tile, Classroom 2, NOB, Green, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				
19-52	2000610-052	White 12"x12" Floor Tile, Classroom 7, NOB, Gray, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6.	Chrysotile	17.0%			Non-Fibrous Material	83.0%
			Total % Asbestos:	17.0%				
19-53	2000610-053	White 12"x12" Floor Tile, Classroom 6, NOB, Gray, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				
20-54	2000610-054	Black 12"x12" Floor Tile, Classroom 4, NOB, Black, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6.	Chrysotile	3.1%			Non-Fibrous Material	96.9%
			Total % Asbestos:	3.1%				
20-55	2000610-055	Black 12"x12" Floor Tile, Classroom 3, NOB, Black, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				

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SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
21-56	2000610-056	Yellow Floor Tile Glue, Classroom 6, NOB, Yellow, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
21-57	2000610-057	Yellow Floor Tile Glue, Classroom 2, NOB, Yellow, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
22-58	2000610-058	2'x4' Ceiling Tile, 1st Floor - Corridor, NOB, Tan, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
22-59	2000610-059	2'x4' Ceiling Tile, 1st Floor - Corridor, NOB, Tan, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
23-60	2000610-060	Pipe Canvas, By Security Office, Friable, White/Silver/Yellow, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected		Cellulose Fiber Fibrous Glass	55% 20%	Non-Fibrous Material	25%
			Total % Asbestos:	No Asbestos Detected				
23-61	2000610-061	Pipe Canvas, By Teacher W/S, Friable, White/Silver/Yellow, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected		Cellulose Fiber Fibrous Glass	55% 20%	Non-Fibrous Material	25%
			Total % Asbestos:	No Asbestos Detected				

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SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
23-62	2000610-062	Pipe Canvas, By Kitchen, Friable, White/Silver/Yellow, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected		Cellulose Fiber Fibrous Glass	55% 20%	Non-Fibrous Material	25%
			Total % Asbestos:	No Asbestos Detected				
24-63	2000610-063	2'x4' Ceiling Tile, By Security Office, NOB, Light Gray/Light Brown, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
24-64	2000610-064	2'x4' Ceiling Tile, By Teacher W/S, NOB, Light Gray/Light Brown, Non-homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
25-65	2000610-065	Brown Cove Base Mastic, Classroom 20, NOB, Dark Brown, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
25-66	2000610-066	Brown Cove Base Mastic, Dining Area, NOB, Dark Brown, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
26-67	2000610-067	Black Cove Base, Classroom 20, NOB, Black, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				

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SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
26-68	2000610-068	Black Cove Base, Dining Area, NOB, Black, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
27-69	2000610-069	Ceramic Tile Glue, Women's Faculty Bathroom, NOB, Light Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6.	Chrysotile	1.7%			Non-Fibrous Material	98.3%
			Total % Asbestos:	1.7%				
27-70	2000610-070	Ceramic Tile Glue, Men's Faculty Bathroom, NOB, Light Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. Positive Stop/Not Analyzed						
			Total % Asbestos:	Not Analyzed				
28-71	2000610-071	Board Attached To Ceiling, Girls' Bathroom, Friable, Light Brown, Homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected		Cellulose Fiber	100%		
			Total % Asbestos:	No Asbestos Detected				
28-72	2000610-072	Board Attached To Ceiling, Men's Faculty Bathroom, Friable, Light Brown, Homogeneous, Fibrous Note: Analyzed via PLM ELAP 198.1.	None Detected		Cellulose Fiber	100%		
			Total % Asbestos:	No Asbestos Detected				
29-73	2000610-073	Exterior Caulking Around Vents, Exterior - By Classroom 12, NOB, Light Gray, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				

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Charge Code:	258.19.14		
Location:	Fuller & D'Angelo/ Yonkers Public Schools/ Westchester Hills School 29/ 47 Croydon Rd./ Yonkers, NY/ 1st Floor	COLLECTED BY:	Usman Younas

SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
29-74	2000610-074	Exterior Caulking Around Vents, Exterior - By Classroom 16, NOB, Light Gray, Homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
30-75	2000610-075	12"x12" Floor Tile Glue, Dining Area, NOB, Beige, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
30-76	2000610-076	12"x12" Floor Tile Glue, Dining Area, NOB, Beige, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
30-77	2000610-077	Gray 12"x12" Floor Tile, Dining Area, NOB, Black/Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
30-78	2000610-078	Gray 12"x12" Floor Tile, Dining Area, NOB, Black/Gray, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				
31-79	2000610-079	Duct Sealant, 1st Floor, NOB, Off-White, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%
			Total % Asbestos:	Inconclusive				

WKP
LABORATORIES, INC.

BULK SAMPLE ANALYSIS REPORT
POLARIZED LIGHT MICROSCOPY

228 East 45th Street 2nd Floor
New York, NY 10017
Tel: (212) 922-0689
Fax: (212) 922-0630

Client:	Warren Panzer Engineers, PC	TURNAROUND TIME:	Standard
WKP File #:	501	DATE COLLECTED:	06/12/2020
WKP Log I.D. #:	2000610	DATE RECEIVED:	06/15/2020
Attention:	Greg Chomenko	ANALYSIS DATE:	06/16/2020
		REPORT DATE:	06/17/2020
Client Job:	258.19.14	REVISED:	
Charge Code:	258.19.14		
Location:	Fuller & D'Angelo/ Yonkers Public Schools/ Westchester Hills School 29/ 47 Croydon Rd./ Yonkers, NY/	COLLECTED BY:	Usman Younas

SUMMARY OF BULK ANALYSIS BY PLM (ELAP 198.1/ 198.6)

Client #	Lab ID #	Sample Description	Asbestos Type(s)	(%)	Non-Asbestos Fibers	(%)	Non-Fibrous Materials	(%)
31-80	2000610-080	Duct Sealant, 1st Floor, NOB, Off-White, Non-homogeneous, Non-Fibrous Note: Analyzed via PLM ELAP 198.6. TEM Recommended.	None Detected	Inconclusive			Non-Fibrous Material	100%

Total % Asbestos: Inconclusive

ANALYSIS / ACCREDITATIONS: Bulk sample analysis by Polarized Light Microscopy, ELAP Method 198.1 and 198.6. NYS ELAP Laboratory ID # 12012 and NVLAP Lab Code 101950-0.

NOTES:

1. NAD denotes NO ASBESTOS DETECTED.
2. Percentages are calculated using the EPA equivalent Stratified Point-Count Method.
3. The samples in this report were not collected by WKP Laboratories, Inc.
4. This report relates only to the samples tested. It may not be used by the client to claim project endorsement by NVLAP, or any other agency of the U.S. government. The report, or certificate, shall not be reproduced, except in full, without the written approval of the laboratory.
5. All inhomogeneous layers of the bulk sample are analyzed separately.
6. PLM bulk samples will be disposed of after 3 months unless otherwise directed by client in writing.
7. * Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative TEM is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.
8. Quality control data (Including 95% confidence limits,laboratory / analysis accuracy and precision) is available upon request.
9. NY ELAP Item 198.6 does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite.
10. Microscope: PLM Microscope #2: Leica DM750P, S/N: 964001380UN0025

Sean Scales
Laboratory Analyst

Sean Scales
Laboratory Director

Report Prepared by:
Sean Scales

WKP
LABORATORIES, INC.

Asbestos Analysis of Bulk Material

Test Method: TEM NYS 198.4 NOB

228 E. 45th St. - 2nd Fl.
New York, NY 10017
Tel.: (212) 922-0689
E-mail: sscales@wkplaboratories.com

CLIENT: Warren Panzer Engineers, PC
WKP LOG ID #: 2000236
ATTENTION: Greg Chomenko
CLIENT JOB #: 258.19.14
LOCATION: Yonkers Public Schools/ Westchester Hills School 29/ 47 Croydon Rd./ Yonkers, NY

DATE COLLECTED: 2/20/2020
RECEIVED DATE: 2/25/2020
ANALYSIS DATE: 2/25/2020
REPORT DATE: 2/25/2020
COLLECTED BY: R. Treglio/J. Sanmartin

ANALYSIS SUMMARY OF BULK MATERIALS

WKP Lab ID #	Client Sample #	Sample Location/Description	% Asbestos and Type
2000236-015	07-15	2'x4' Ceiling Tile, 1st Floor - Women's Faculty Bathroom	None Detected
2000236-016	07-16	2'x4' Ceiling Tile, 1st Floor - Boys' Faculty Bathroom	None Detected

Accreditations: This report contains TEM data that was produced under subcontract by ALAC, NYS-ELAP #11605 (via ATC, NYS-ELAP #10879)

Notes: 1) NAD denotes "NO ASBESTOS DETECTED" / Inconclusive. NA - Not Analyzed. 2) The samples in this report were not collected by WKP Laboratories, Inc. Therefore, bears no responsibility for sample collection activities or analytical method limitations. 3) This report relates only to the samples tested. It may not be used by the client to claim project endorsement by NVLAP, or any other agency of the U.S. government. 4) The report, or certificate, shall not be reproduced, except in full, without the written approval of WKP Laboratories, Inc. 5) All non-homogeneous layers of the bulk sample are analyzed separately. 6) PLM bulk samples will be disposed of after 3 months unless otherwise directed by client in writing. 7) PLM is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative TEM is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing. 8) Quality control data is available upon request.

Sean Scales
Laboratory Director

ALLAB Inc.
1544 East 13th Street, Unit CE, Brooklyn, NY 11230
TEL: (718) 864-3666 EMAIL: allabcru@gmail.com
NYS DOH ELAP# 12118

TEM NOB SAMPLE ANALYSIS REPORT

CLIENT: WKP Laboratories, INC. **ALLAB project:** 200617-8

BUILDING ADDRESS: 258.19.15

Project ID: 2000609

Client Sample ID#	HA No.	SAMPLE DESCRIPTION	SAMPLE LOCATION	LAB ID#	ANALYTICAL METHOD	GRAVIMETRIC			TEM RESULT
						Organic,%	Non-organic,%	CACO3 %	
01	01	Glazing		200617-8-1	198.4	11.29	2.70	86.01	NAD
03	02	Glazing		200617-8-2	198.4	6.11	0.62	93.27	NAD
04	03	Glazing		200617-8-3	198.4	7.19	0.69	92.12	NAD
07	04	Glue		200617-8-4	198.4	76.34	13.07	10.59	NAD
08	04	Glue		200617-8-5	198.4	30.23	10.52	59.25	NAD
09	04	Floor Tile		200617-8-6	198.4	21.82	3.18	75.00	NAD
10	04	Floor Tile		200617-8-7	198.4	21.29	11.57	67.14	NAD
11	04	Floor Tile		200617-8-8	198.4	21.22	18.46	60.33	NAD
12	04	Floor Tile		200617-8-9	198.4	21.38	22.76	55.86	NAD

Date Collected: 16-Jun-2020 **Date Received:** 17-Jun-2020

Date of Analysis: 18-Jun-2020 **Date of Report:** 18-Jun-2020

Analyst: A. Barengolts
Alex Barengolts

Lab Director: A. Barengolts
Alex Barengolts

* Analysis of samples is performed by Polarized Light Microscopy (PLM) - Point Counting Method (EPA 600/M4-82-020) ,or ELAP-198.1 for NY Friable samples

* PLM is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos-containing. NAD or TRACE by PLM are inconclusive.

(**) In accordance with NYS DOH definitive negative results for NOB materials can only be determined by performing Transmission Electron Microscopy (TEM) ELAP Method 198.4

(*) All above mention samples only determined as NOB and must be analized by one of gravimetric matrix reduction methods (198.6 & 198.4)

* Not Applicable = not analyzed positive stop.ELAP PLM Method 198.1 for NY friable samples include the identification and quantitation for vermiculite.

* The results relate only to the items calibrated or tested. NAD-No asbestos Detected

* The certificate of report shall not be reproduced without the written approval of the laboratory.

* The report must not be used by the client to claim endorsement by ELAP or any other agency of the US Government. Samples will be stored for sixty (60) days

ALLAB Inc.
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TEL: (718) 864-3666 EMAIL: allabcru@gmail.com
NYS DOH ELAP# 12118

TEM NOB SAMPLE ANALYSIS REPORT

CLIENT: WKP Laboratories, INC. **ALLAB project:** 200617-8

BUILDING ADDRESS: 258.19.15

Project ID: 2000609

Client Sample ID#	HA No.	SAMPLE DESCRIPTION	SAMPLE LOCATION	LAB ID#	ANALYTICAL METHOD	GRAVIMETRIC			TEM RESULT
						Organic,%	Non-organic,%	CACO3 %	
35	09	Glue		200617-8-10	198.4	37.29	18.64	44.07	NAD
36	09	Glue		200617-8-11	198.4	59.38	8.86	31.76	NAD
37	09	Floor Tile		200617-8-12	198.4	23.82	10.96	65.22	NAD
38	09	Floor Tile		200617-8-13	198.4	22.18	13.36	64.46	NAD
39	09	Floor Tile		200617-8-14	198.4	23.74	10.92	65.33	NAD
40	09	Floor Tile		200617-8-15	198.4	23.09	4.60	72.31	NAD
41	10	Ceiling Tile		200617-8-16	198.4	25.05	20.58	54.37	NAD
42	10	Ceiling Tile		200617-8-17	198.4	22.10	17.96	59.94	NAD
47	13	Glue		200617-8-18	198.4	49.14	5.95	44.91	NAD

Date Collected: 16-Jun-2020 **Date Received:** 17-Jun-2020

Date of Analysis: 18-Jun-2020 **Date of Report:** 18-Jun-2020

Analyst: A.Barengolts
Alex Barengolts

Lab Director: A.Barengolts
Alex Barengolts

* Analysis of samples is performed by Polarized Light Microscopy (PLM) - Point Counting Method (EPA 600/M4-82-020) ,or ELAP-198.1 for NY Friable samples

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* The results relate only to the items calibrated or tested. NAD-No asbestos Detected
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NYS DOH ELAP# 12118

TEM NOB SAMPLE ANALYSIS REPORT

CLIENT: WKP Laboratories, INC. **ALLAB project:** 200617-8

BUILDING ADDRESS: 258.19.15

Project ID: 2000609

Client Sample ID#	HA No.	SAMPLE DESCRIPTION	SAMPLE LOCATION	LAB ID#	ANALYTICAL METHOD	GRAVIMETRIC			TEM RESULT
						Organic,%	Non-organic,%	CACO3 %	
48	13	Glue		200617-8-19	198.4	63.64	7.27	29.09	NAD
49	13	Floor Tile		200617-8-20	198.4	20.49	4.57	74.94	NAD
50	13	Floor Tile		200617-8-21	198.4	18.35	12.15	69.50	NAD

Date Collected: 16-Jun-2020 **Date Received:** 17-Jun-2020

Date of Analysis: 18-Jun-2020 **Date of Report:** 18-Jun-2020

Analyst: A.Barengolts
Alex Barengolts

Lab Director: A.Barengolts
Alex Barengolts

* Analysis of samples is performed by Polarized Light Microscopy (PLM) - Point Counting Method (EPA 600/M4-82-020) ,or ELAP-198.1 for NY Friable samples

* PLM is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos-containing. NAD or TRACE by PLM are inconclusive.
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(*) All above mention samples only determined as NOB and must be analized by one of gravimetric matrix reduction methods (198.6 & 198.4)
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* The results relate only to the items calibrated or tested. NAD-No asbestos Detected
* The certificate of report shall not be reproduced without the written approval of the laboratory.
* The report must not be used by the client to claim endorsement by ELAP or any other agency of the US Government. Samples will be stored for sixty (60) days

warrenpanzer
environmental engineering
228 East 45th Street, 2nd floor
Phone: (212) 922-0077
New York, NY 10017
Fax: (212) 922-0630

2000236

Client Name: Fuller & D'Angelo
Property Address: Yonkers PS 29
Survey Location: 47 Croydon Rd., Yonkers, NY
W&P file #: 258.19.14

☐ PLM –EPA 600/M4/82/020
☐ PLM NOB –NYS 198.1/198.6
☐ TEM NOB –NYS 198.4

BULK SAMPLE – CHAIN-OF-CUSTODY FORM

COMMENTS:

Turnaround time: **RUSH** 24hr 48hr

QTY	Condition	Sample #	Location	Material Description	RESULTS (lab use only) PLM Friable	PLM NOB	TEM NOB
5 ft²	Damage	01-01	Bsmt Boiler Rm / Boiler 1	Boiler Cement Patch			
↓	↓	02	Boiler 2	↓			
↓	↓	03	Boiler 2	↓			
10 ft²	Fair	04	Flu to Boiler 2	↓			
		02-05	Basment Boiler Rm / Base of Boiler 1	Brick Mortar			
		06	↓ Base of Boiler 2	↓			
		03-07	1st Floor - Women Faculty Bathroom	Ceramic Floor Tile Grout (configured Tile Shape)			
		08	↓	↓			
		04-09	1st Fl - Men Faculty Bathroom	Ceramic Floor Tile Grout (1 sq.inch tiles)			
		10	↓	↓			
		05-11	1st Fl - Woman Faculty Bathroom	Ceramic Wall Tile Grout			

Sampled By: R. Treglio & J. Sammartin Date: 2/20/20
Signature: [signature] Time: _____

Relinquished By: R. Treglio Date: 2/24/20
Signature: [signature] Time: _____

Received By: Saad Asl Date: 2/24/2020
Signature: [signature] Time: 12:00 PM

Analyzed By: Sean J Scales Date: 02/24/20
Signature: [signature] Time: 4:00 PM

2000236

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environmental engineering
228 East 45th Street, 2nd floor
Phone: (212) 922-0077
New York, NY 10017
Fax: (212) 922-0630

Client Name: Fuller & D'Angelo
Property Address: Yonkers PS 29
Survey Location: 42 Croydon Rd, Yonkers
W&P file #: 258.19.14

☐ PLM -EPA 600/M4/82/020
☐ PLM NOB -NYS 198.1/198.6
☐ TEM NOB -NYS 198.4

BULK SAMPLE - CHAIN-OF-CUSTODY FORM

COMMENTS:

Turnaround time: (RUSH) 24hr 48hr

QTY	Condition	Sample #	Location	Material Description	RESULTS (lab use only) PLM Friable	PLM NOB	TEM NOB
		05-12	1st Fl - Men Faculty Bathroom	Ceramic Wall Tile Grout			
		06-13	1st Fl - Boys Bathroom	Ceramic Wall Tile Grout (4x4")			
		14	↓ - Girls Bathroom	↓			
		07-15	1st Fl - Woman Faculty Bathroom	Ceiling Tile (2'x4')			
		16	↓ - Boys Bathroom	↓			
		08-17	Exterior Windows Along Connection	Exterior Window Caulk			
		18	outside Rm 22	↓			
		19	outside Rm 10	↓			
		20	Inner Court	↓			
		09-21	Exterior Wall Inner Court -	Brick Mortar			
		22	↓ Inner Court - Rm 13	↓			

Sampled By: R. Treglia & S. Sanmartine Date: 2/20/20
Signature: Time:

Relinquished By: R. Treglia Date: 2/24/20
Signature: Time:

Received By: Saad Asif Date: 2/24/2020
Signature: Time: 12:00 PM

Analyzed By: Sean J Scales Date: 02/24/20
Signature: Sean J Scales Time: 4:00 PM

2000610

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environmental engineering
228 East 45th Street, 2nd floor
Phone: (212) 922-0077
New York, NY 10017
Fax: (212) 922-0630

Client Name: Fuller & Dangelo
Property Address: 47 Croydon Road B29
Survey Location: 1st Floor
W&P file #: 258.19.14

☑ PLM -EPA 600/M4/82/020
☑ PLM NOB -NYS 198.1/198.6
☑ TEM NOB -NYS 198.4

BULK SAMPLE - CHAIN-OF-CUSTODY FORM

COMMENTS:

Turnaround time: RUSH (24hr) 48hr

QTY	Condition	Sample #	Location	Material Description	RESULTS (lab use only) PLM Friable	PLM NOB	TEM NOB
250 LF	Good	1-1	Exterior Door B/CR 8	Door caulking (old bldg)			
↓	↓	1-2	↓ ↓ 24	↓ ↓			
↓	↓	1-3	↓ ↓ By Stall Lounge	↓ ↓			
8000 LF		2-4	Exterior kitchen	window glazing			
↓		2-5	↓ CR 2	↓			
↓		2-6	↓ CR 6	↓			
100 SF		3-7	Exterior By CR 12	TAR Above Vents			
↓		3-8	↓ ↓ 16	↓ ↓			
100 SF		4-9	By Grade CR	(New Bldg)			
↓	↓	4-10	↓ office	↓ ↓			

Sampled By: Usman Younas — Date: 6/12/20
Signature: Usman Younas — Time: 7AM

Relinquished By: Usman Younas — Date: 6/15/20
Signature: Usman Younas — Time: 1 PM

Received By: Saad Asif — Date: 6/15/20
Signature: — Time: 1:30 PM

Analyzed By: Sean J Scales — Date: 06/16/20
Signature: Sean J Scales — Time: 10:45 AM

2000616

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environmental engineering
228 East 45th Street, 2nd floor
Phone: (212) 922-0077
New York, NY 10017
Fax: (212) 922-0630

Client Name: Fuller & Dangelo
Property Address: 47 Croydon Road PS 29
Survey Location: 1st Floor
W&P file #: 258.19.14

☑ PLM -EPA 600/M4/82/020
☑ PLM NOB -NYS 198.1/198.6
☑ TEM NOB -NYS 198.4

BULK SAMPLE - CHAIN-OF-CUSTODY FORM

COMMENTS: CR = Class Room w/s workshop

Turnaround time: RUSH (24hr) 48hr

QTY	Condition	Sample #	Location	Material Description	RESULTS (lab use only) PLM Friable	PLM NOB	TEM NOB
700 SF	Good	5-11	Exterior BY special ED CR	Door Mortar NEW BLDG			
↓	↓	5-12	↓ BY OT/FT	↓			
800 LF		6-13	Grade 3 CR	Window Glazing			
↓		6-14	Teacher w/s Lounge	↓			
2/600 SF		7-15	CR 23	Black Mastic UNDER 9x9 Ft (ANALYZE ONLY MASTIC)			
↓		7-16	CR 21	↓			
↓		7-17	CR 23	(Lite Brown) 9x9 Floor Tile (ANALYZE ONLY TILE)			
↓		7-18	CR 21	↓			
2/600		8-19	CR 24	9x9 FL tile Mastic (Green) (ANALYZE MASTIC ONLY)			
↓	↓	8-20	CR 22				

Sampled By: OSMAN YOUNAS Date: 6/12/20
Signature: OSMAN YOUNAS Time: 7AM

Relinquished By: OSMAN YOUNAS Date: 6/15/20
Signature: OSMAN YOUNAS Time: 1PM

Received By: Saad Asif Date: 6/15/20
Signature: Time: 1:30PM

Analyzed By: Sean J Scales Date: 06/16/20
Signature: Sean J Scales Time: 10:45 AM

200610

warrenpanzer
environmental engineering
228 East 45th Street, 2nd floor
Phone: (212) 922-0077
New York, NY 10017
Fax: (212) 922-0630

Client Name: Fuller & DANGelo
Property Address: 47 CROYDON Road PS29
Survey Location: 1st Floor
W&P file #: 258.19.14

☒ PLM –EPA 600/M4/82/020
☐ PLM NOB –NYS 198.1/198.6
☐ TEM NOB –NYS 198.4

BULK SAMPLE – CHAIN-OF-CUSTODY FORM

COMMENTS:

Turnaround time: RUSH ~~24hr~~ 48hr

QTY	Condition	Sample #	Location	Material Description	RESULTS (lab use only) PLM Friable	PLM NOB	TEM NOB
2/100	Good	8-21	CR 24	(Green) 9x9 Floor tile			
		8-22	CR 22				
2/100		9-23	CR 20	Black MASTIC UNDER 9x9 Floor tile			
		9-24	CR 18				
		9-25	CR 20	(Gray) 9x9 Floor tile			
		9-26	CR 18				
2/100 SF		10-27	CR 17	(Red) 9x9 Floor tile			
		10-28	CR 11				
		11-29	CR 10	(Black 9x9 Floor tile)			
		11-30	CR 8				

ANALYZE Floor tile ONLY

ANALYZE MASTIC only

ANALYZE Floor tile only

Sampled By: USMAN YOUNAS	Date: 6/12/20	Received By: Saad Asif	Date: 6/15/20
Signature: USMAN YOUNAS	Time: 7AM	Signature:	Time: 1:38PM
Relinquished By: USMAN YOUNAS	Date: 6/15/20	Analyzed By: Sean J Scales	Date: 06/16/20
Signature: USMAN YOUNAS	Time: 1 PM	Signature: Sean J Scales	Time: 10:45AM

2000616

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environmental engineering
228 East 45th Street, 2nd floor
Phone: (212) 922-0077
New York, NY 10017
Fax: (212) 922-0630

Client Name: Fuller @ D'Angelo
Property Address: 47 CROYDON ROAD 1529
Survey Location: 1st Floor
W&P file #: 258.19.14

- [x] PLM -EPA 600/M4/82/020
- [x] PLM NOB -NYS 198.1/198.6
- [x] TEM NOB -NYS 198.4

BULK SAMPLE - CHAIN-OF-CUSTODY FORM

COMMENTS:

Turnaround time: RUSH (24hr) 48hr

QTY	Condition	Sample #	Location	Material Description	RESULTS (lab use only) PLM Friable	PLM NOB	TEM NOB
500 SF	Good	12-31	CR-8	slate			
↓		12-32	CR-13	↓			
50 SF		13-33	CR-8	slate Grout			
↓		13-34	CR-13	↓			
2500 SF		14-35	CR-13	CMU Mortar			
↓		14-36	BY WOMEN FACULTY Bathroom	↓			
↓		14-37		↓			
3000 SF		15-38	BY kitchen	white coat PLASTER WALL			
↓		15-39	CR-7	↓ ↓ ↓			
↓		15-40	CR-6				
↓	↓	15-41	CR-2				

Sampled By: USMAN YOUNAS Date: 6/12/20
Signature: USMAN YOUNAS Time: 7AM

Relinquished By: USMAN YOUNAS Date: 6/15/20
Signature: USMAN YOUNAS Time: 1 PM

Received By: Saad Asif Date: 6/15/20
Signature: Time: 1:30 PM

Analyzed By: Sean J Scales Date: 06/16/20
Signature: Sean J Scales Time: 10:45AM

2000 6/6

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environmental engineering
228 East 45th Street, 2nd floor
Phone: (212) 922-0077
New York, NY 10017
Fax: (212) 922-0630

Client Name: Fuller & DANgelo
Property Address: 47 CROYDON RD BX29
Survey Location: 1st Floor
W&P file #: 258.19.14

- [x] PLM -EPA 600/M4/82/020
- [x] PLM NOB -NYS 198.1/198.6
- [ ] TEM NOB -NYS 198.4

BULK SAMPLE - CHAIN-OF-CUSTODY FORM

COMMENTS:

Turnaround time: RUSH 24hr 48hr

QTY	Condition	Sample #	Location	Material Description	RESULTS (lab use only) PLM Friable	PLM NOB	TEM NOB
3000SF	Good	15-42	CR 2	White coat PLASTER WALL			
		16-43	BY kitchen	Brown coat PLASTER WALL			
		16-44	CR 7				
		16-45	CR 6				
		16-46	CR 1				
		16-47	CR 2				
2000SF		17-48	CR 5	Black Mastic UNDER 12x12 Floor tile			
		17-49	CR 2				
		18-50	CR 5	12x12 Green Floor tile (ANALYZE ONLY TILE)			
		18-51	CR 2				

Sampled By: USMAN YOUNAS	Date: 6/12/20	Received By: Saad Asif	Date: 6/15/20
Signature: USMAN YOUNAS	Time: 7AM	Signature:	Time: 1:30PM
Relinquished By: USMAN YOUNAS	Date: 6/15/20	Analyzed By: Sean J Scales	Date: 06/16/20
Signature: USMAN YOUNAS	Time: 1PM	Signature: Sean J Scales	Time: 10:45AM

200616

warrenpanzer
environmental engineering
228 East 45th Street, 2nd floor
Phone: (212) 922-0077
New York, NY 10017
Fax: (212) 922-0630

Client Name: Fuller & DANGelo
Property Address: 47 CROYDON RD PS29
Survey Location: 1st floor
W&P file #: 258.19.14

☑ PLM -EPA 600/M4/82/020
☑ PLM NOB -NYS 198.1/198.6
☐ TEM NOB -NYS 198.4

BULK SAMPLE - CHAIN-OF-CUSTODY FORM

COMMENTS:

Turnaround time: RUSH (24hr) 48hr

QTY	Condition	Sample #	Location	Material Description	RESULTS (lab use only) PLM Friable	PLM NOB	TEM NOB
2000sf	Good	19-52	CR 7	(white) 12x12 Floor tile (ANALYZE only Tile)			
↓	↓	19-53	CR 6	↓			
2000sf		20-54	CR 4	(Black) 12x12 Floor tile			
↓		20-55	CR 3	↓			
2000sf		21-56	CR 6	(Yellow) floor tile sheet (ANALYZE one only)			
↓		21-57	CR 2	↓ ↓			
2000sf		22-58	1st floor Corridor	2x4 ceiling tile			
↓		22-59	↓	↓			
100LF		23-60	BY security office	Pipe Canvic			
↓		23-61	BY teacher w/s	↓			
↓	↓	23-62	BY kitchen	↓			

Sampled By: USMAN YOUNAS	Date: 6/12/20	Received By: Saad Asif	Date: 6/15/20
Signature: USMAN YOUNAS	Time: 7 AM	Signature:	Time: 1:30 pm
Relinquished By: USMAN YOUNAS	Date: 6/15/20	Analyzed By: Sean J Scales	Date: 06/16/20
Signature: USMAN YOUNAS	Time: 1 PM	Signature: Sean J Scales	Time: 10:45AM

2006616

warrenpanzer
environmental engineering
228 East 45th Street, 2nd floor
Phone: (212) 922-0077
New York, NY 10017
Fax: (212) 922-0630

Client Name: Fuller D'Angelo
Property Address: 47 CROYDON RD 11729
Survey Location: 1st Floor
W&P file #: 258.19.14

~~☐ PLM -EPA 600/M4/82/020~~
☑ PLM NOB -NYS 198.1/198.6
☑ TEM NOB -NYS 198.4

BULK SAMPLE - CHAIN-OF-CUSTODY FORM

COMMENTS:

Turnaround time: RUSH (24hr) 48hr

QTY	Condition	Sample #	Location	Material Description	RESULTS (lab use only) PLM Friable	PLM NOB	TEM NOB
5680 SF	GOOD	24-63	BY security office	2x2 ceiling tile			
↓	↓	24-64	BY teacher w/s	↓			
100 SF	↓	25-65	CR 20	Cove base Mastic (Brown) (ANALYZE only MASTIC)			
↓	↓	25-66	Dining area	↓ ↓			
↓	↓	26-67	CR 20	Cove base (Black) (ANALYZE only Cove base)			
↓	↓	26-68	Dining area	↓ ↓			
1000 SF	↓	27-69	Faculty Women Bathroom	Ceramic tile glue			
↓	↓	27-70	Faculty MEN ↓	↓			
500 SF	↓	28-71	Girls Bathroom	Board w/ ~~Attic~~ Attached to ceiling			
500 SF	↓	28-72	Faculty MEN Bathroom	↓ ↓			

Sampled By: OSMAN YOUNAS	Date: 6/12/20	Received By: Saad Asif	Date: 6/15/20
Signature: OSMAN YOUNAS	Time: 7AM	Signature:	Time: 1:30 PM
Relinquished By: OSMAN YOUNAS	Date: 6/15/20	Analyzed By: Sean J Scales	Date: 06/16/20
Signature: OSMAN YOUNAS	Time: 1PM	Signature: Sean J Scales	Time: 10:45AM

warrenpanzer
environmental engineering
228 East 45th Street, 2nd floor
Phone: **(212) 922-0077**
New York, NY 10017
Fax: **(212) 922-0630**

200616

Client Name: Fuller & D'Angelo

Property Address: 47 CROYDON RD PS 29

Survey Location: 1st Floor

W&P file #: 258.19.14

- ☑ PLM –EPA 600/M4/82/020
- ☐ PLM NOB –NYS 198.1/198.6
- ☐ TEM NOB –NYS 198.4

BULK SAMPLE – CHAIN-OF-CUSTODY FORM

COMMENTS:

Turnaround time: **RUSH** **24hr** **48hr**

QTY	Condition	Sample #	Location	Material Description	RESULTS (lab use only) PLM Friable	PLM NOB	TEM NOB
100 SF	Good	29-73	Exterior BY CP 12	Caulking around vents Exterior			
		29-74	BY CP 16				
2500 SF		30-75	Dining area	12x12 floor tile glue (ANALYZE glue only)			
		30-76					
		30-77		12x12 gray floor tile (ANALYZE Tile only)			
		30-78					
10 SF		31-79	1st Floor	Duct sealant			
		31-80					

Sampled By: Usman Younas

Signature: USMAN YOUNAS

Date: 6/12/20

Time: 7AM

Received By: Saad Asif

Signature:

Date: 6/15/20

Time: 1:30 PM

Relinquished By: Usman Younas

Signature: USMAN YOUNAS

Date: 6/15/20

Time: 1PM

Analyzed By: Sean J Scales

Signature: Sean J Scales

Date: 06/16/20

Time: 10:45AM

Appendix B

Company & Personnel Licenses

New York State – Department of Labor
Division of Safety and Health
License and Certificate Unit
State Campus, Building 12
Albany, NY 12240

ASBESTOS HANDLING LICENSE

Warren & Panzer, Engineers, P.C.
2nd Floor
228 East 45th Street

New York, NY 10017

FILE NUMBER: 99-0641
LICENSE NUMBER: 28898
LICENSE CLASS: RESTRICTED
DATE OF ISSUE: 07/10/2019
EXPIRATION DATE: 07/31/2020

Duly Authorized Representative – Jeffrey Terhune PE:

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

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

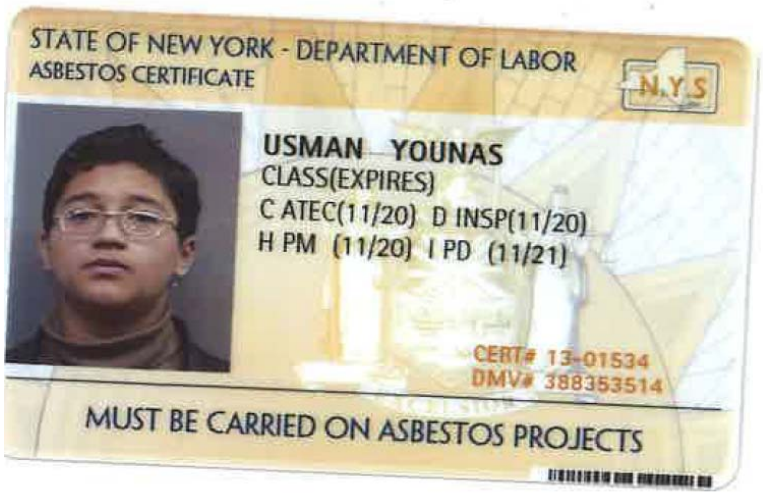
Eileen M. Franko, Director
For the Commissioner of Labor

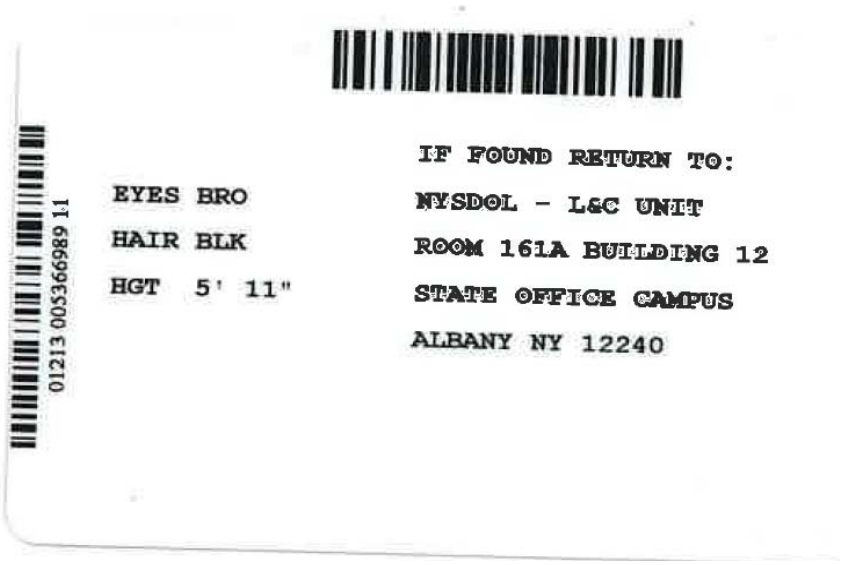
SH 432 (8/12)

WARREN & PANZER ENGINEERS
NEW YORK STATE DEPARTMENT OF LABOR
ASBESTOS LICENSES

Usman Younas

Inspector





Codes (Found on the front of the license):

- A - Asbestos Handler
- B - Restricted Handler
- C - Project Air Sampling Technician
- D - Inspector - R III
- E - Management Planner
- F - Operations and Maintenance
- G Supervisor
- H - Project Monitor
- I - Allied Trades
- I - Project Designer

warrenpanzer

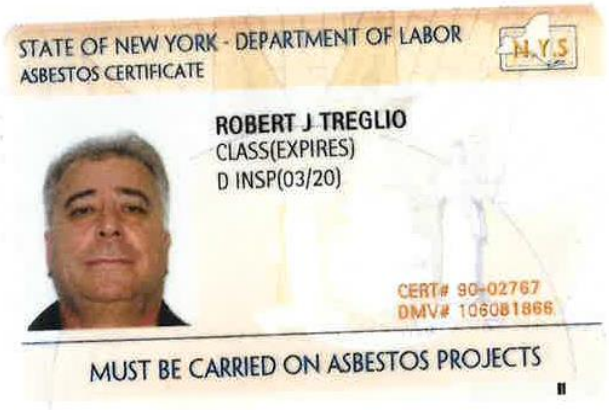
New York State Department of Labor

Asbestos License

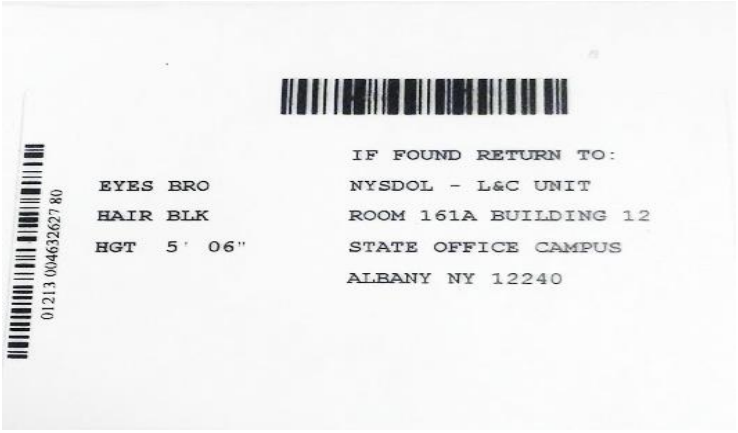
Robert J Treglio

Project Manager

Front of License



Back of License



Codes (Found on the back of the license):

A- Asbestos Handler
B- Restricted Handler
C- Project Air Sampling Technician
D- Inspector – R III
E- Management Planner
F- Operations and Maintenance
G- Supervisor
H- Project Monitor
I- Allied Trades
I- Project Designer

Appendix C

Laboratory Accreditations

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2020
Issued April 01, 2019

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. SEAN SCALES
WKP LABORATORIES, INC.
228 EAST 45TH ST. 2ND FLOOR
NEW YORK, NY 10017

NY Lab Id No: 12012

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

Miscellaneous

Asbestos in Friable Material	Item 198.1 of Manual
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)

Serial No.: 59970

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2020
Issued April 01, 2019

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. SEAN SCALES
WKP LABORATORIES, INC.
228 EAST 45TH ST. 2ND FLOOR
NEW YORK, NY 10017

NY Lab Id No: 12012

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

Miscellaneous

Fibers	NIOSH 7400 A RULES

Serial No.: 59971

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2021
Issued April 01, 2020

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. SEAN SCALES
WKP LABORATORIES, INC.
228 EAST 45TH ST. 2ND FLOOR
NEW YORK, NY 10017

NY Lab Id No: 12012

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

Miscellaneous

Fibers	NIOSH 7400 A RULES

Serial No.: 61683

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2021
Issued April 01, 2020

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. SEAN SCALES
WKP LABORATORIES, INC.
228 EAST 45TH ST. 2ND FLOOR
NEW YORK, NY 10017

NY Lab Id No: 12012

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

Miscellaneous

Asbestos in Friable Material	Item 198.1 of Manual
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)

Serial No.: 61682

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2020
Issued April 01, 2019

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MS. MILENA BONEZZI
ATC GROUP SERVICES LLC
104 EAST 25TH STREET 8TH FLOOR
NEW YORK, NY 10010

NY Lab Id No: 10879

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2003) for the category ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Miscellaneous

Asbestos	EPA 100.2

Serial No.: 59464

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2020
Issued April 01, 2019

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MS. MILENA BONEZZI
ATC GROUP SERVICES LLC
104 EAST 25TH STREET 8TH FLOOR
NEW YORK, NY 10010

NY Lab Id No: 10879

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

Miscellaneous

Asbestos in Friable Material	Item 198.1 of Manual
	EPA 600/M4/82/020
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	Item 198.4 of Manual
Asbestos-Vermiculite-Containing Material	Item 198.8 of Manual

Serial No.: 59465

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2020
Issued April 01, 2019

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MS. MILENA BONEZZI
ATC GROUP SERVICES LLC
104 EAST 25TH STREET 8TH FLOOR
NEW YORK, NY 10010

NY Lab Id No: 10879

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

Miscellaneous

Asbestos	40 CFR 763 APX A No. III
	NIOSH 7402
Fibers	NIOSH 7400 A RULES

Serial No.: 59466

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2021
Issued April 01, 2020

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MS. MILENA BONEZZI
ATC GROUP SERVICES LLC
104 EAST 25TH STREET 8TH FLOOR
NEW YORK, NY 10010

NY Lab Id No: 10879

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2003) for the category ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Miscellaneous

Asbestos	EPA 100.2

Serial No.: 61221

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2021
Issued April 01, 2020

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MS. MILENA BONEZZI
ATC GROUP SERVICES LLC
104 EAST 25TH STREET 8TH FLOOR
NEW YORK, NY 10010

NY Lab Id No: 10879

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

Miscellaneous

Asbestos in Friable Material	Item 198.1 of Manual
	EPA 600/M4/82/020
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	Item 198.4 of Manual
Asbestos-Vermiculite-Containing Material	Item 198.8 of Manual

Serial No.: 61222

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2021
Issued April 01, 2020

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MS. MILENA BONEZZI
ATC GROUP SERVICES LLC
104 EAST 25TH STREET 8TH FLOOR
NEW YORK, NY 10010

NY Lab Id No: 10879

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

Miscellaneous

Asbestos	40 CFR 763 APX A No. III
	NIOSH 7402
Fibers	NIOSH 7400 A RULES

Serial No.: 61223

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2021
Issued April 27, 2020
Revised May 20, 2020

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. ALEKSANDR BARENGOLTS
ALLAB INC
1544 EAST 13 STREET UNIT CA, BASEMENT
BROOKLYN, NY 11230-7281

NY Lab Id No: 12118

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

Miscellaneous

Asbestos	40 CFR 763 APX A No. III
	NIOSH 7402
Fibers	NIOSH 7400 A RULES

NEW YORK STATE | Department of Health

Serial No.: 62018

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2021
Issued April 27, 2020
Revised May 20, 2020

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. ALEKSANDR BARENGOLTS
ALLAB INC
1544 EAST 13 STREET UNIT CA, BASEMENT
BROOKLYN, NY 11230-7281

NY Lab Id No: 12118

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

Miscellaneous

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

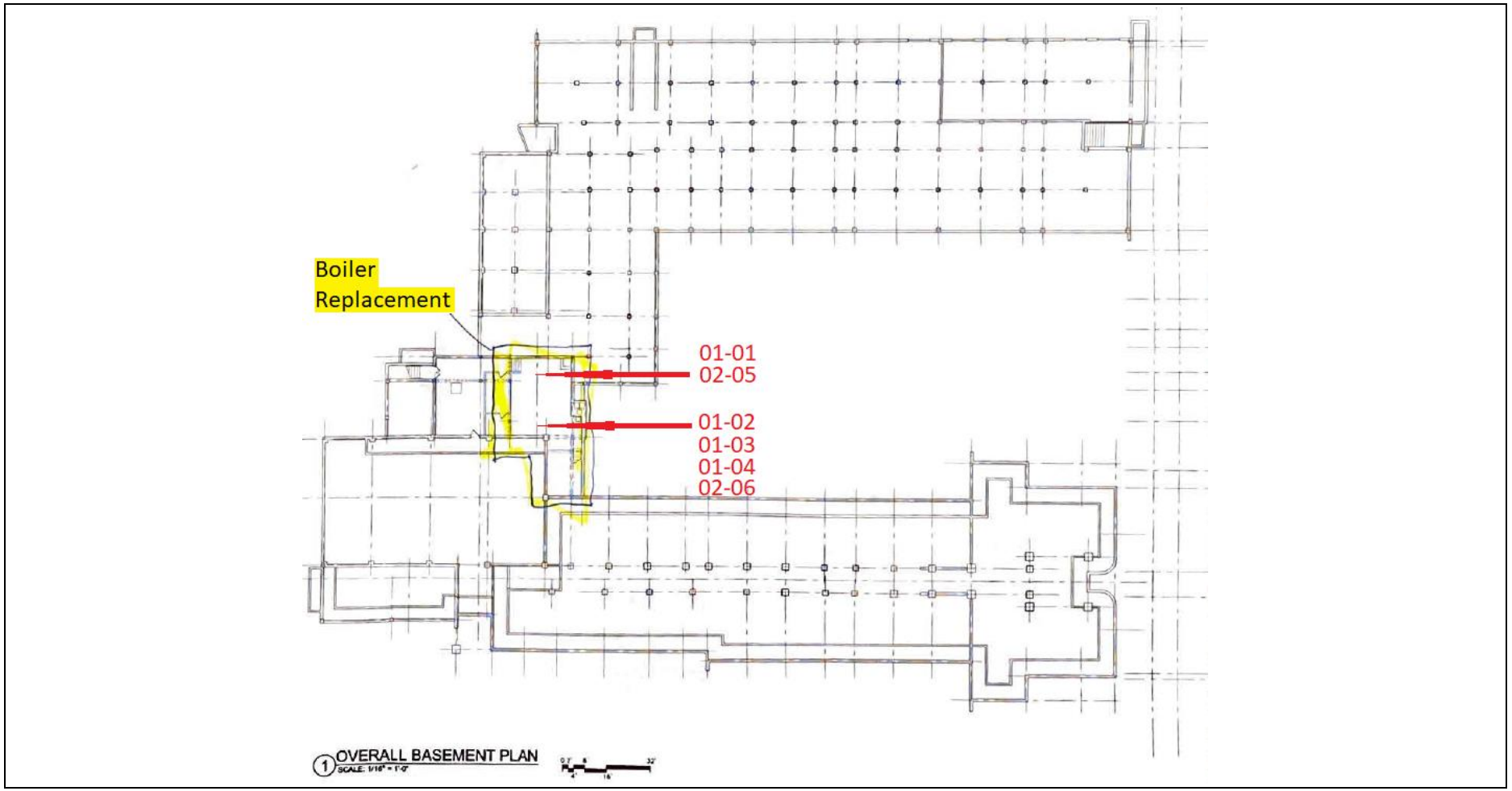
Serial No.: 62017

Appendix D

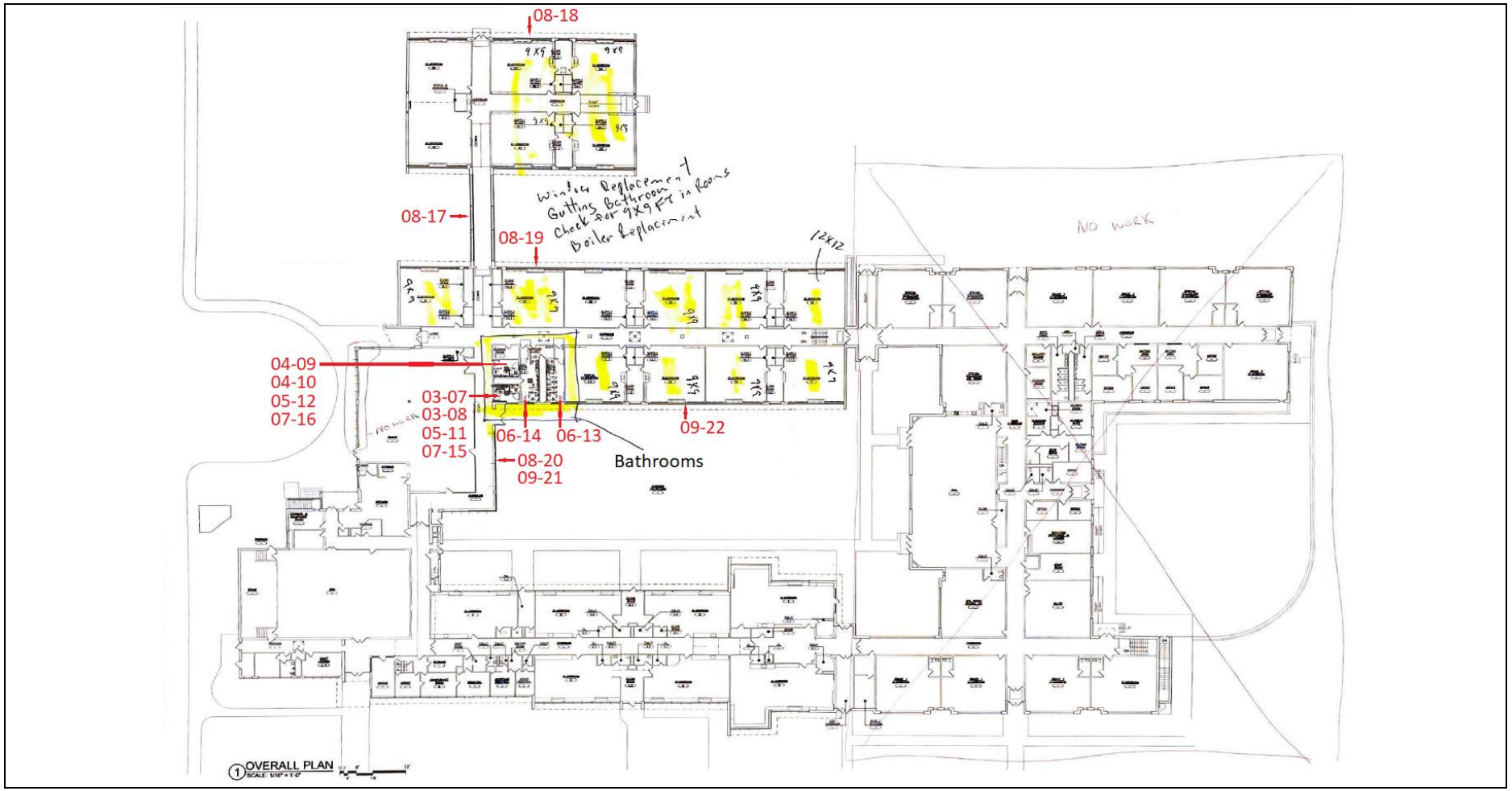
Sample Locations

Project Name: Limited Asbestos Survey	**Project #** 258.19.14
Project Location: Yonkers Public School/ Westchester Hills School 29/ 47 Croydon Rd./ Yonkers, NY 10710	**Sampling Date:** February 20, 2020

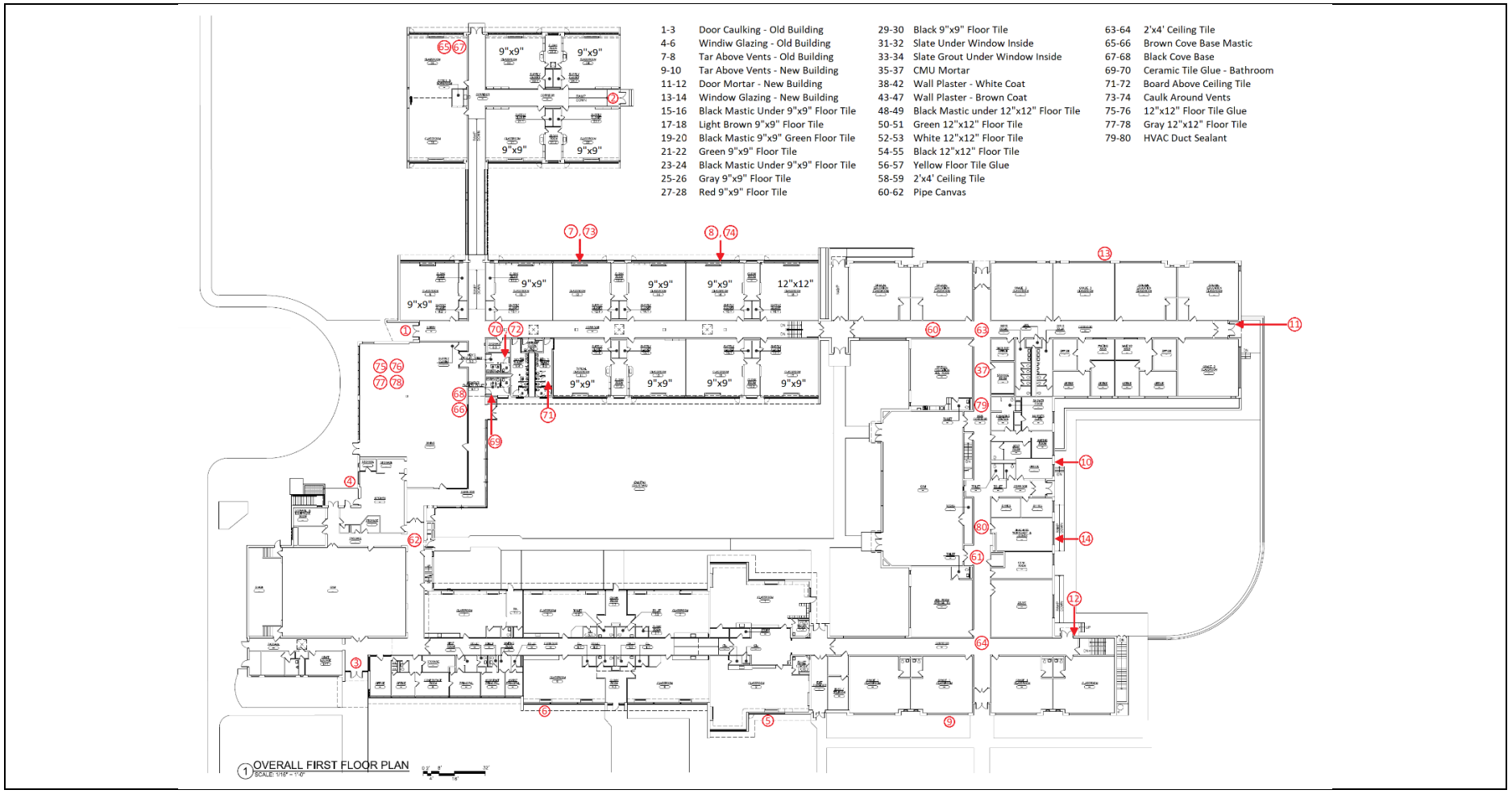
ACM Locations:



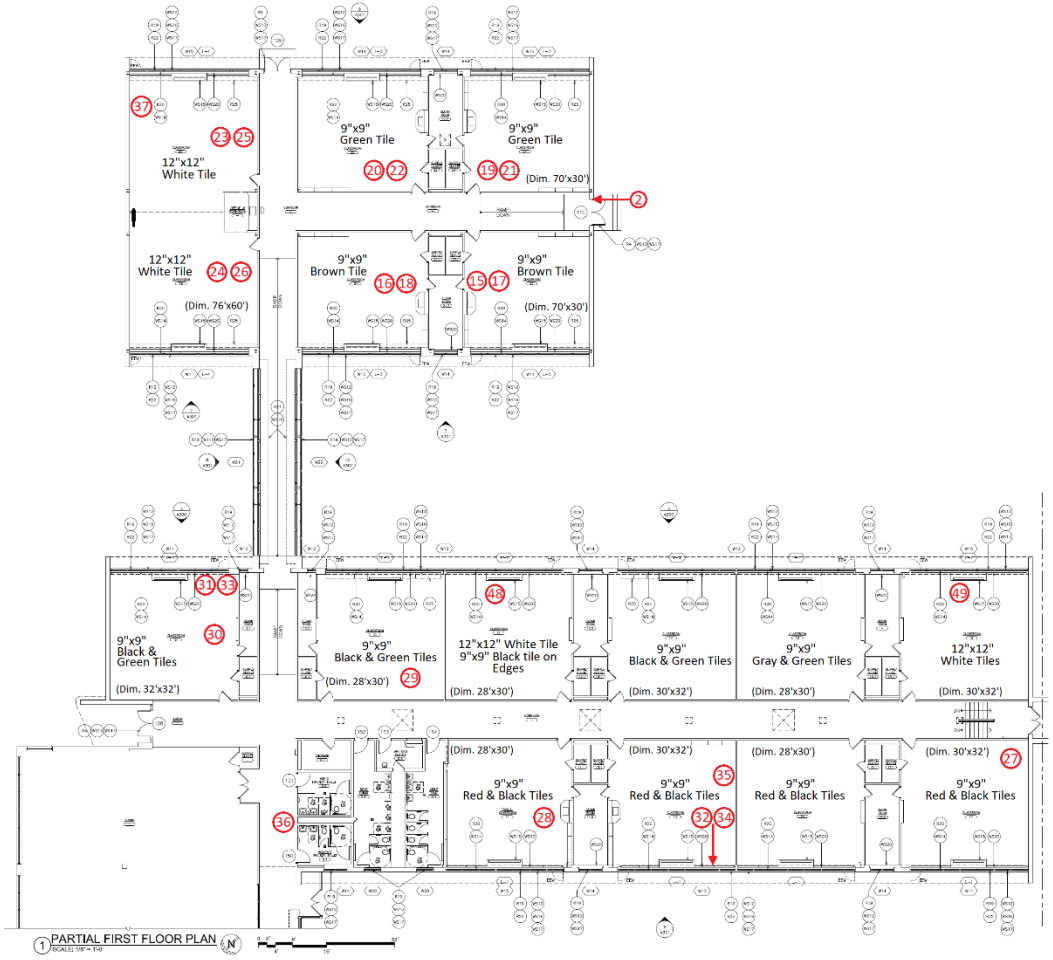
Project Name: Limited Asbestos Survey	**Project #** 258.19.14
Project Location: Yonkers Public School/ Westchester Hills School 29/ 47 Croydon Rd./ Yonkers, NY 10710	**Sampling Date:** February 20, 2020



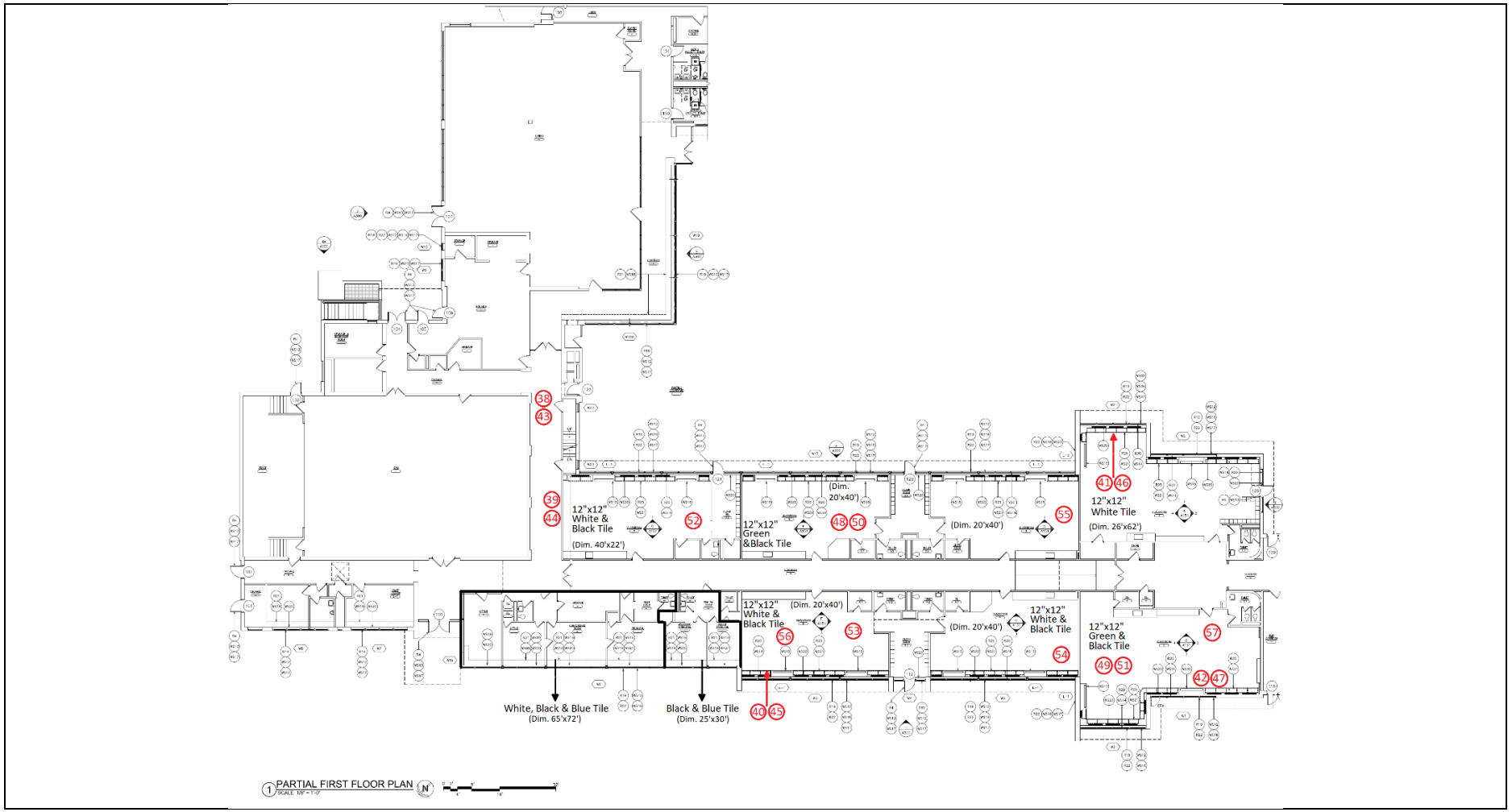
Project Name: Limited Asbestos Survey	**Project #** 258.19.14
Project Location: Yonkers Public School Westchester Hills School 29/ 47 Croydon Rd./ Yonkers, NY 10710	**Sampling Date:** June 12, 2020



Project Name: Limited Asbestos Survey	**Project #** 258.19.14
Project Location: Yonkers Public School Westchester Hills School 29/ 47 Croydon Rd./ Yonkers, NY 10710	**Sampling Date:** June 12, 2020

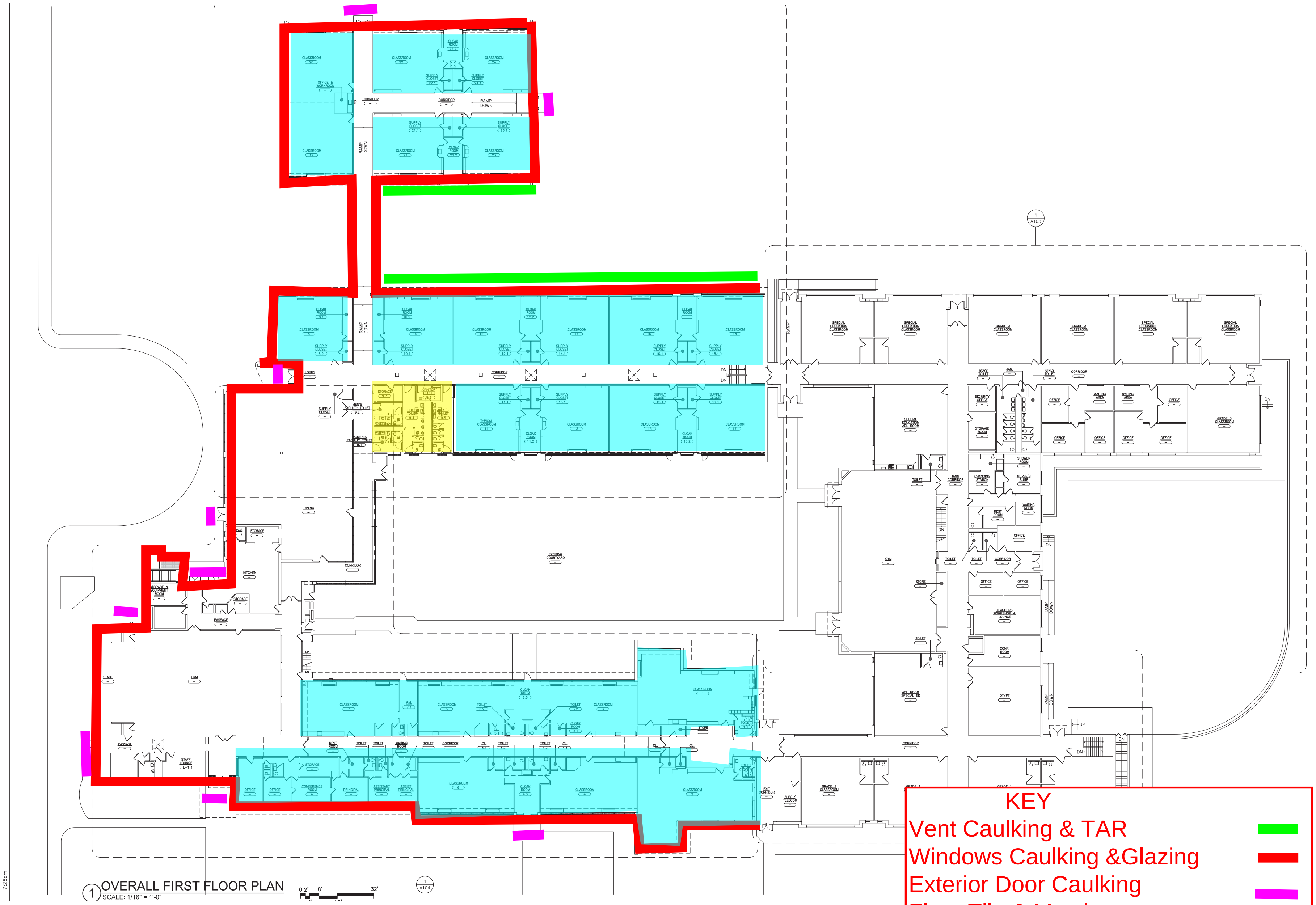


Project Name: Limited Asbestos Survey	**Project #** 258.19.14
Project Location: Yonkers Public School Westchester Hills School 29/ 47 Croydon Rd./ Yonkers, NY 10710	**Sampling Date:** June 12, 2020



Appendix E

ACM Locations



1 OVERALL FIRST FLOOR PLAN
SCALE: 1/16" = 1'-0"

KEY

- Vent Caulking & TAR
- Windows Caulking &Glazing
- Exterior Door Caulking
- Floor Tile & Mastic
- Ceramic tile Glue

FULLER D'ANGELO P.C.
ARCHITECTS PLANNERS
45 KNOLLWOOD ROAD ELMSFORD NEW YORK 10523
TEL 914.592.4444 FAX 914.592.1717
WWW.FULLERDANGELO.COM

S.E.D. CONTROL NUMBER:
66-23-00-01-0-029-012

YPS #10878

PROJECT TITLE
YONKERS SCHOOL DISTRICT
PS 29 - WINDOW REPLACEMENT, MASONRY & SITE IMPROVEMENTS
47 CROYDON ROAD, YONKERS N.Y. 10710

DRAWING TITLE
OVERALL FIRST FLOOR PLAN

05-01-2020 | 50% D.D. SUBMISSION

SECTION 03 3000
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Slabs on grade.

B. Concrete reinforcement.

1.2 RELATED REQUIREMENTS

A. Section 32 1313 - Concrete Paving: Sidewalks, curbs and gutters.

1.3 REFERENCE STANDARDS

A. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials; 2010 (Reapproved 2015).

B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).

C. ACI 301 - Specifications for Structural Concrete; 2016.

D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).

E. ACI 305R - Guide to Hot Weather Concreting; 2010.

F. ACI 306R - Guide to Cold Weather Concreting; 2016.

G. ACI 308R - Guide to External Curing of Concrete; 2016.

H. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2018).

I. ACI 347R - Guide to Formwork for Concrete; 2014.

J. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars; 2017.

K. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement; 2014.

L. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2012.

M. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2016, with Editorial Revision (2016).

N. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2018.

O. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2018.

P. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.

Q. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2016.

1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.

C. Mix Design: Submit proposed concrete mix design.

1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.

1.5 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.

B. Follow recommendations of ACI 305R when concreting during hot weather.

C. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

2.1 FORMWORK

A. Formwork Design and Construction: Comply with guidelines of ACI 347R to provide formwork that will produce concrete complying with tolerances of ACI 117.

B. Form Materials: TBD's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.

1. Form Facing for Exposed Finish Concrete: TBD's choice of materials that will provide smooth, stain-free final appearance.
2. Earth Cuts: Do not use earth cuts as forms for vertical surfaces. Natural rock formations that maintain a stable vertical edge may be used as side forms.
3. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
4. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

2.2 REINFORCEMENT MATERIALS

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).

1. Type: Deformed billet-steel bars.
2. Finish: Epoxy coated in accordance with ASTM A775/A775M, unless otherwise indicated.

B. Steel Welded Wire Reinforcement (WWR): Class A epoxy coated, deformed type, ASTM A884/A884M.

1. WWR Style: 4 x 8-W6 x W10.

C. Reinforcement Accessories:

1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.
2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.

2.3 CONCRETE MATERIALS

A. Cement: ASTM C150/C150M, Type I - Normal Portland type.

B. Fine and Coarse Aggregates: ASTM C33/C33M.

C. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.4 ADMIXTURES

A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

B. High Range Water Reducing Admixture: ASTM C494/C494M Type F.

2.5 ACCESSORY MATERIALS

A. Underslab Vapor Retarder: Polyethylene Film: ASTM D2103, 6 mil, 0.006 inch (0.152 mm) thick, clear.

2.6 BONDING AND JOINTING PRODUCTS

A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.

B. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.

2.7 CURING MATERIALS

A. Moisture-Retaining Sheet: ASTM C171.

1. Polyethylene film, white opaque, minimum nominal thickness of 4 mil, 0.004 inch.

2.8 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.

B. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.

C. Normal Weight Concrete:
   1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 4,000 pounds per square inch.
   2. Water-Cement Ratio: Maximum 40 percent by weight.
   3. Maximum Slump: 4 inches.
   4. Maximum Aggregate Size: 5/8 inch.

2.9 MIXING

A. Transit Mixers: Comply with ASTM C94/C94M.

B. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

B. Verify existing slab elevations and coordinate final floor finish elelvations with new slab.

3.2 PREPARATION

A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.

B. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
   1. Use latex bonding agent only for non-load-bearing applications.

C. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

D. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.

3.3 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

A. Fabricate and handle epoxy-coated reinforcing in accordance with ASTM D3963/D3963M.

B. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

C. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

3.4 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

B. Place concrete for floor slabs in accordance with ACI 302.1R.

C. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.5 SLAB JOINTING

A. Locate joints as indicated on drawings.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.

3.6 CONCRETE FINISHING

A. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:

1. Other Surfaces to Be Left Exposed: Trowel as described in ACI 302.1R, minimizing burnish marks and other appearance defects.

3.7 CURING AND PROTECTION

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
   1. Normal concrete: Not less than seven days.

3.8 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.

D. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

E. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

3.9 DEFECTIVE CONCRETE

A. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.

B. Repair or replacement of defective concrete will be determined by the Fuller and D'Angelo, P.C. . The cost of additional testing shall be borne by TBD when defective concrete is identified.

3.10 PROTECTION

A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

SECTION 04 0100
MASONRY MAINTENANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. All plant, labor, materials, equipment, testing and services necessary to complete the work shown on the drawings, schedules, and keynotes, as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but not limited to:

1. Remove and restore exterior masonry where new cap flashings are being installed.

2. Prepare and repoint mortar joints.

3. Clean and prepare the joints, and then install new sealant in masonry coping and facade joints.

4. Install two heavy brush coats of cement based masonry waterproofing.

5. Carefully dismantle and rebuild exterior masonry.

6. Install clear water repellant on masonry that was repointed, repaired or rebuilt.

7. Remove and reset loose bricks and concrete masonry units under roof edge blocking.

8. Fill hollow core masonry units under roof edge blocking with mortar prior to installing wood blocking - the blocking is specified elsewhere.

B. Related Requirements

1.	Carpentry	- Section 06 1000
2.	EPDM Roofing	- Section 07 5323
3.	Sheet Metal Flashing & Specialties	- Section 07 6200
4.	Roof Accessories	- Section 07 7200

1.3 QUALITY ASSURANCE

A. Installer Qualifications:

1. A firm (Installer) with at least 5 continuous years experience performing work similar to that required for this project, employing personnel skilled in the work specified.

   a. The Installer shall directly employ the personnel performing the work of this section.

   b. The Installer shall have a full time supervisor in the work area when work is in progress. The Supervisor shall have a minimum of 5 years experience with work similar in nature and scope to this project, and speak fluent English.

      1. Submit the Supervisor’s resume upon request.

2. The Installer shall provide a reference list of at least three previously completed projects of comparable size and similar design, within fifty miles of this project, which may be observed by representatives of the Owner.

   a. The reference list shall include at a minimum, the completion date, a description of the work performed, the Owner's name - contact person - phone number and address and the Architect's name - contact person and phone number.

   b. Submit the reference list upon request.

B. Material Quality: Obtain each type of material from a single source to ensure consistent quality, color, pattern, and texture.

C. Pre-construction conference: Attend the pre-construction meeting and discuss the following:

1. How and when masonry work will be performed.
2. How the masonry work will be coordinated with other work.
3. How roof & building surfaces will be protected.
4. How the building will be kept watertight as masonry work progresses.
5. Weather to anticipate during construction.
6. The availability of materials, personnel, equipment and facilities needed to proceed and complete the work on schedule.
7. A schedule for Manufacturer and Architect inspections.

1.4 SUBMITTALS

A. Submit the following items far enough in advance to obtain approval prior to performing any other work on site:

1. A pre-work site and building inspection report with photos, to document conditions before any other work starts on site.

2. Manufacturer's technical literature for all materials.

3. Test reports and certifications substantiating compliance with specification requirements if requested by the Architect.

4. Samples to show sizes, grade and color, prior to mock-up erection, of each new exposed masonry material. Include the full range of colors and textures needed in the samples.

   a. Bricks: four samples of solid colors, twelve samples of blended colors.
   b. Mortar: four 6 inch long 1/2 inch wide strips set in metal or plastic channels.
   c. Anchors: four pieces of each type of anchor.

B. Simultaneously provide all technical submittals needed for this project, for all technical sections, collated by section. Incomplete submittals will not be reviewed.

1. Submittals shall be prepared and made by the firm that will perform the actual work.

2. Provide electronic submittals via an on-line submittal exchange program if one is established for this project; if an on-line program isn't established, provide the submittals on portable USB drives in pdf format, organized in folders by Section.

2. Safety Data Sheets: Simultaneously provide all Safety Data Sheets needed for this project, for all specification sections - collated by section, in three ring binders. Provide two binders for each building.

C. Payment requisitions will not be processed until all submittals are received and approved.

1.5 JOB MOCK UPS

A. Prepare mock-ups of masonry work in actual job locations.

1. For brick rebuilding - provide 4 foot long mockups.
2. For repointing - provide 2 foot square mockups to show how the joints will be cut, and 2 foot square mockups to show new pointing.
3. For sealant joints - provide 2 foot long mockups to show how the joints will be prepared, and 2 foot long mockups to show new backer rod and sealant.

B. Construct each mock up with its associated roof and wall flashings, to show the following:

1. The color, size and type of each masonry unit and mortar used to set it.
2. Workmanship quality.
3. The size and spacing of weep inserts.
4. Flashings built into the masonry.
5. Related materials and their installation techniques to fully establish a quality standard for the work.

C. Mock-ups shall be constructed to establish the minimum acceptable standard of materials and workmanship, and to assure that completed work which matches the mock ups will be fully functional and serve the purpose for which it was designed.

D. Approved mock-ups may be left in place and incorporated into the permanent installation. Rejected mock-ups shall be removed and replaced until an acceptable mock up is approved.

E. Do not proceed with masonry work until mock-ups are installed, inspected and approved in writing.

1.6 DELIVERY, STORAGE AND HANDLING

A. Carefully pack, handle, and ship masonry units and accessories in suitable packs or pallets or in heavy cartons.

B. Deliver material to the site in the Manufacturer's original and unopened containers and packaging, bearing labels which identify the types and names of the products and Manufacturers. Unload and handle to prevent chipping and breakage.

C. Protect masonry materials and aggregates during storage and construction from excess wetting by rain, snow or ground water, and from staining or intermixture with earth or other types of materials.

D. Protect grout, mortar and cement products from deterioration by moisture and temperature. Store in a dry location or in waterproof containers. Protect liquid components from freezing.

E. Do not overload the structure when storing materials on the roof.

F. Protect roof surfaces where material and equipment are placed on them, and where construction traffic occurs, with 6 mil fire retardant polyethylene, covered with 1-1/2 inch thick foam insulation, overlaid with 2 by 10 wooden planks.

1.7 GUARANTEE

A. Provide a written Contractor's Guarantee which guaranties that all work will remain free of material and workmanship defects and in a watertight condition for five years period beginning upon Final Completion:

1. Defects include but are not limited to the following: leakage, delamination, lifting, loosening, splitting, cracking, joint separation and movement.

2. The Contractor shall make the repairs and modifications necessary to enable the work to perform as guaranteed at his own expense:

3. Guarantee coverage shall include removing and replacing items installed as part of the original work, if removal is needed to make repairs.

B. Provide one Guarantee that covers “all work performed” when a single contractor is awarded work specified in multiple Sections.

C. The Guarantee shall take effect no more than 30 days before the satisfactory completion of all punch list work.

D. The Contractor’s Surety Company may add a rider to the Performance Bond which clarifies that Performance Bond Coverage expires two years after Final Completion; i.e., Performance Bond Coverage does not run for the entire five year term of the Contractor’s Guarantee.

1.8 JOB CONDITIONS

A. Perform masonry work only when the air temperature is 40 degrees F and above and will remain so until the masonry has dried, but for not less than 72 hours after work ends.

B. Erect temporary covers over pedestrian walkways and at building entrances and exits which will remain active as the work progresses.

C. Prevent mortar from staining the face of surrounding masonry and other building surfaces; immediately remove any which falls or spills. Protect sills, ledges and projections from mortar droppings.

D. Protect roof surfaces where material and equipment are placed on them, and where construction traffic occurs, with 6 mil fire retardant polyethylene, covered with 1-1/2 inch thick foam insulation, overlaid with 2 by 10 wooden planks.

E. Coordinate masonry removal and restoration with the installation of new flashings.

F. Prevent masonry work from rapid drying during hot weather. Use burlap to shield fresh masonry from direct sunlight, and mist fresh masonry with potable water so it cures slowly for at least 72 hours.

1. Remove and replace any new masonry that develops shrinkage cracks, or isn’t bonded well to adjoining masonry.

PART 2 - PRODUCTS

2.1 MASONRY UNITS

A. Face Brick: Severe weather (SW) grade face brick and accessories, including special bricks for corners, and other special conditions, to match the color, surface texture, shape and size of existing bricks.

2.2 MORTAR

A. General Construction Mortar:

1. Type S, custom colored, non-staining masonry cement containing Type I Portland cement meeting ASTM C150 and Type S hydrated lime meeting ASTM C207.

2. Natural or manufactured sand aggregate selected to match the size, texture, graduation and color of the existing mortar aggregate, meeting ASTM C 144.

3. Clean potable water, free of oils, acids, alkalis and organic matter.

B. Pointing Mortar:

1. Factory blended Type N masonry cement, aggregate and custom coloring agent, ready to use when mixed with clean potable water, as supplied by Spec-Mix.

C. Concrete Repair Mortar: Single component, cement mineral based, custom colored repair mortar: Jahn M90, as manufactured by Cathedral Stone Products, Inc.

2.3 MISCELLANEOUS MATERIALS

A. Anchors: Fabricated from Type 304 stainless steel to match existing.

B. Reinforcement Bar: minimum #4 epoxy coated steel rebar, with factory formed ridges.

C. Sealant: High performance, solvent free, formulated and moisture curing silyl-terminated polyether sealant, ASTM C-920, Type S, Grade NS, Class 25, NovaLink construction sealant by ChemLink, color as selected.

D. Backer Rod: Closed cell polyethylene foam, non-absorbent, compressible, chemically inert rod.

E. Masonry Water Repellent: Cloudy odorless water-based penetrating liquid, UV stable, alkali resistant, translucent floural carbon emulsion, containing no volatile organic compounds: Cathedral Stone Products, Inc. R-97 Water Repellent.

F. Cement Based Waterproofing: Portland cement based factory blended dry powder product mixed with potable water and an acrylic based waterproofing bonding agent equal to Thoroseal and Acryl 60 as manufactured by Thoro System Products, color to match existing walls.

G. Weep Inserts: Full height head joint inserts formed of a polypropylene honey comb, three-eighths inch thick, Hohmann & Barnard, Inc. #QV Quadro-Vent.

PART 3 - EXECUTION

3.1 GENERAL

A. Carefully perform work so the structural integrity of masonry adjoining the work is preserved. Simultaneously remove only limited sections of existing masonry; support and protect masonry remaining next to and above the removal areas.

B. Completely remove and replace any existing masonry that moves, or if cracks form in the mortar joints between the masonry units, or within the masonry units.

C. Cure all mortar by misting it with potable water to maintain it in a damp condition for not less than 72 hours. Shield fresh mortar from direct sunlight with wet burlap, and prevent fresh mortar from prematurely drying during the curing period. Remove and replace mortar joints that dry pre-maturely.

D. Cut and remove existing masonry using hand and machine methods. Equip each cutting machine with a separate dedicated vacuum and manufacturer’s blade guard vacuum attachment, and control the amount of dust produced so there are no visible plumes. Comply with OSHA crystalline silica standards for construction.

E. Do not overcut brick head joints and allow the blade to nick the bricks; remove and replace bricks damaged during the cutting and repointing preparation process at no cost to the Owner.

3.2 MORTAR MIXES

A. Measurement and Mixing:

1. Measure general construction mortar materials when dry by volume using a pail or similar container. Do not measure with a shovel.
    a. Mix mortar using 1 part mortar cement and 3 parts sand aggregate.
    b. Thoroughly mix cement and aggregate in a clean mechanical batch mixer before adding water; then continue mixing and add only enough water to produce a workable mix.
    c. Do not mix mortar by hand.

2. Mix factory blended pointing mortar in a clean mechanical batch mixer, adding only enough water to produce a workable mix.
    a. Do not mix mortar by hand.

3. Use mortar within 45 minutes of final mixing; do not re-temper or use partially hardened material.

B. Mix and install mortar with the same ingredients used to produce the approved mock-up. Do not adjust the color or proportions without written approval. Do not use admixtures of any kind in the mortar unless specifically approved.

3.3 BRICK REMOVAL AND REPLACEMENT

A. Simultaneously remove only limited sections of existing brick masonry; support and protect masonry remaining next to and above the removal areas.

B. Carefully remove bricks on a piece-by-piece basis. Cut out full units from joint to joint and to permit replacement with full size units. Clean the edges of the remaining bricks, to remove all mortar, dust, and loose debris in preparation for rebuilding.

C. Install new cap flashings and wall flashing extensions, properly lapped under and connected to the existing wall flashings, as indicated on the drawings and specified elsewhere, before installing new bricks. Install the flashings so a full wythe of new brick will fit flush with the existing wall surface.

D. Wet bricks which have initial rates of absorption (suction) greater than 30 grams per 30 square inches per minute, (in accordance with ASTM C 67), to ensure the bricks are nearly saturated with water, but surface dry when laid.

E. Install new brick to replace removed brick. Fit replacement bricks to match the original bond and course pattern. Use a motor driven diamond blade wet saw to cut bricks with clean, sharp unchipped edges.

F. Lay replacement brick with completely filled bed, head and collar joints. Butter the ends with sufficient mortar to fill the head joints and shove the bricks into place.

G. Install new bricks with mortar joints to match the width of the adjoining brick joints. Tool the new joints to match existing joints in surrounding brickwork.

H. Do not cut off the backs of the new bricks if a full wythe of brick doesn’t fit. Notify the Architect and obtain his direction before proceeding further.

3.4 REPOINTING EXISTING MASONRY

A. Joint Preparation:

1. Remove existing mortar and foreign material from the mortar joints to a minimum depth of 1 inch, and deeper where needed to expose sound unweathered mortar.

2. Remove mortar from the sides of the joints to provide joints with square backs and to expose the masonry for contact with the pointing mortar. Brush or vacuum the joints to remove dirt and loose debris.

3. Remove mortar and other foreign material from the surface of masonry adjacent to the joint.

4. Do not spall the edges of adjacent masonry or widen the joints. Replace any masonry which is damaged.

B. Joint Pointing:

1. Rinse the joint surfaces with water to remove dust and mortar particles just prior to repointing. Time the rinse, so when repointing occurs, excess water has evaporated and the existing masonry is damp but free of standing water.

2. Apply pointing mortar in 1/2 inch thick layers, and thoroughly compact each layer before adding the next layer, to completely fill each joint.

3. Slightly recess pointing mortar from the face of the adjacent masonry units. Do not spread mortar on the edges or faces of the masonry. Do not featheredge the mortar.

4. Tool repointed joints when the mortar is thumbprint hard. Remove excess mortar from the edges of the joints with a soft bristle brush.

C. Cleaning:

1. Immediately after the mortar has fully hardened, thoroughly clean masonry surfaces of excess mortar and foreign matter using stiff nylon or bristle brushes and clean water.

2. Do not use metal scrapers or brushes. Do not use acid or alkali cleaning agents. Do not pressure-wash the masonry or new pointing mortar.

3.5 SEALANT JOINTS

A. Carefully remove existing sealant and back up material from within the joints to a minimum depth of 1-1/2 inches, and from the surface of adjoining masonry at the edges of the joints.

1. Use hand tools and work to avoid damage to adjoining masonry.

2. Replace adjoining masonry damaged during sealant removal work.

B. Install new backer rod without puncturing or tearing it, to snuggly fill the joint at a depth to yield a sealant joint twice as wide as it is deep.

1. Do not twist backer rods, or install multiple pieces of undersized rod, when the correct size rod is not onsite.

C. Mask the edges of all joints prior to installing sealant.

1. Push sealant into the joint to completely fill it, tool the sealant to produce a slightly concave, neat recessed joint, and remove joint masking before excess sealant sets.

3.6 WATER REPELLENT

A. Prepare and clean masonry surfaces to receive water repellent utilizing hand, chemical and pressure water methods as needed to remove all dirt, dust, efflorescence, mold, salt, grease, oil, asphalt, laitance, paint and other foreign materials.

B. Allow the masonry surfaces to dry for a minimum of 48 hours at a temperature above 50° F.

C. Mask and protect adjoining surfaces i.e., the roof, flashings, windows, side walls and site plantings from over spray.

D. Apply two coats of water repellent using a low pressure (15-20 psi maximum) wet fan type nozzle or 1 inch nap roller in a “flooding” application, to thoroughly saturate the masonry, starting at the bottom so the material runs 6 to 8 inches below the points of application.

1. Apply the second coat of water repellent about 10 minutes after the first coat, and as soon as the first coat has soaked into the masonry, but before the first coat dries.

3.7 WATERPROOFING

A. Prepare and clean masonry surfaces to receive waterproofing utilizing hand, chemical and pressure water methods as needed to remove all dirt, dust efflorescence, mold, salt, grease, oil, asphalt, laitance, paint and other foreign materials.

B. Dampen the surface with potable water before applying waterproofing.

C. Mask and protect adjoining surfaces i.e., the roof, flashings, windows, side walls and site plantings from splatter.

D. Mixed the waterproofing to a smooth thick heavy batter consistency, and apply two heavy brush coats of waterproofing, about 2 hours apart, brushing each coat thoroughly into the substrate surface.

E. Maintain cement waterproofing damp, by misting it with potable water, to enable it to cure slowly for at least 48 hours. Shield fresh waterproofing from direct sunlight with wet burlap, and prevent it from drying during the curing period.

3.8 CLEANING, PROTECTION AND WATERTIGHTNESS

A. Inspect the interior and exterior of the building and grounds, and submit a written report with photos to document any pre-existing leakage or damage, prior to performing any work.

B. The Owner will conduct a similar inspection at the completion of the work, and the Contractor will be charged for all leaks and damage that weren’t documented in the Contractor’s report, or repaired to the Owners satisfaction at the Contractor’s expense.

C. Provide any equipment, material and labor necessary to protect the site, the building, its contents and occupants, pedestrians, and surrounding landscaped and paved areas from damage due to the construction work or from inclement weather during construction.

D. Do not perform work during inclement weather. Protect incomplete work and the building from damage by inclement weather - which may occur unexpectedly. Make all work areas watertight at the end of each day's work.

E. Clean up all litter, refuse, rubbish, scrap materials and debris at least twice a day; at noon and at the end of the work day, so the roof and site are neat, orderly and workmanlike. Place the debris in a dumpster, and remove the dumpster from the site as soon as it is full or no longer being used.

F. Carefully and thoroughly clean the entire roof to remove all residual debris when all work is complete. After cleaning the roof, thoroughly clean all drain sumps, drain lines, leader heads and leaders. Do not allow debris to enter the drainage system.

END OF SECTION

SECTION 04 0110
GENERAL MAINTENANCE OF MASONRY

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. Dust control.

B. Removals.

C. Replacing existing masonry.

D. Cutting new openings in existing exterior masonry walls.

E. Water cleaning of exterior masonry.

F. Removal and rebuilding of exterior masonry units.

G. Paint removal of existing brick surfaces.

H. Install flashings.

I. Salvaging and re-using existing masonry units.

J. Mortar and Grout.

K. Repointing mortar joints where indicated and/or required.

L. Remove and install new sealant joints.

M. Clean existing masonry stains. Weep holes

N. Weep holes.

O. Repointing and restoration existing cast stone and brick.

P. Cleaning and coating existing reinforcing.

Q. Remove and reinstall existing electrical devices.

1.3 RELATED REQUIREMENTS

A. Section 04 0100 - Roof Related Masonry Maintenance

B. Section 01 5000 - Temporary Facilities and Controls.

C. Section 05 5000 - Metal Fabrications.

D. Section 06 1000 - Carpentry

E. Section 06 1010 - Roof Related Rough Carpentry.

F. Section 07 1800 - Traffic Coatings.

G. Section 07 5323 - EPDM Roofing

H. Section 07 6200 - Sheet Metal Flashings and Specialties

I. Section 07 1900 - Water Repellents.

J. Section 07 7200 - Roof Accessories

K. Section 07 9200 - Joint Sealants.

L. Section 09 9113 - Exterior Painting.

M. Section 09 2400 - Cement Plastering

1.4 REFERENCE STANDARDS

A. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2014a.

B. ASTM C476 - Standard Specification for Grout for Masonry; 2018.

C. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2016.

D. ACI 530.1/ASCE 6/TMS 602 - Specification for Masonry Structures; American Concrete Institute International; 2008.

E. IMIAWC (HW) - Recommended Practices & Guide Specifications for Hot Weather Masonry Construction; International Masonry Industry All-Weather Council; current edition.

1.5 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week prior to commencing work of this section.
   1. Require attendance of parties directly affecting work of this section.

1.6 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on all material, including recommended installation procedures.

C. Samples: Submit four samples of face brick units for each building to illustrate matching color, texture and extremes of color range.
   1. For each type of mortar provide 6 inch long by 1/2 inch wide sample strips set in metal or plastic channels.

D. Manufacturer's Instructions: For cleaning materials, indicate special procedures, conditions requiring special attention.

E. Test reports and certifications substantiating compliance with specification requirements.

F. Simultaneously provide all Material Safety Data Sheets needed for this project, for all specification sections - collated by section, in three ring binders

1.7 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

B. Qualification: The sub-contractor with a minimum of five years experience, experienced masonry restoration and cleaning firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance.
   1. The Installer shall directly employ the personnel performing the work of this section
   2. Submit a reference list which shall include at a minimum, the completion date, a description of the work performed, the Owner's name - contact person - phone number and address and the Architect's name - contact person and phone number.

C. The Installer shall provide a reference list of at least three (3) projects of comparable size and similar design, within a fifty mile radius of this project, which may be observed by representatives of the Owner:
   1. The reference list shall include at a minimum, the completion date, a description of the work performed, the Owner’s name - contact person - phone number and address and the Architect’s name - contact person and phone number.
   2. The Installer shall provide the reference list prior to contract award if requested.
   3. Field Supervision: Restoration specialist firms shall maintain experienced full-time supervisors on Project site during times that clay masonry restoration and cleaning are in progress. Supervisors shall not be changed during Project except for causes beyond the control of restoration specialist firm. The supervisor shall have a minimum of 5 years experience with work similar in nature and scope to this project, and speak fluent English.

D. Chemical Manufacturer Qualifications: A firm regularly engaged in producing masonry cleaners that have been used for similar applications with successful results, and with factory-trained representatives who are available for consultation and Project-site inspection and assistance at no additional cost.

E. Source Limitations: Obtain each type of material for masonry restoration (face brick, cement, sand, etc.) from one source with resources to provide materials of consistent quality in appearance and physical properties.

F. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect the substrate before application of each product and to instruct applicator on the product and application method to be used.

G. Pre-Work Conference: Attend the pre-roofing meeting and discuss the following:
   1. How masonry work will be performed and coordinated with other work.
   2. How the building will be kept watertight as masonry work progresses.
   3. The construction schedule, forecast weather, availability of materials, personnel, equipment and facilities needed to proceed and complete the work on schedule.
   4. A schedule for Manufacturer and Architect inspections.

1.8 MOCK-UP

A. Restore an existing masonry wall area sized 4 feet long by 2 feet high; include in mock-up area instances of mortar, accessories, and flashings.

B. For repointing - provide 2 foot square mockups to show how the joints will be cut, and 2 foot square mockups to show new pointing

C. Provide mock-up of opening on each floor including and repoint of existing opening include in mock-up area instances of brick, stucco, mortar, flashings, repointiing, and accessories.

D. Mesh joint reinforcing for stucco.

E. How flashings will be built into the masonry.

F. Clean a 4 ft by 4 ft panel of wall to determine extent of cleaning.

G. Locate where directed.

H. Acceptable panel and procedures employed will become the standard for work of this section.

I. Mock-up may remain as part of the Work.

J. Allow samples to cure at least three days (or longer, if possible) before obtaining YPS Office of Facilities Management and Architect's approval for color match. Mortar colors will continue to lighten as they cure and are exposed to the weather, so samples should be installed as far in advance as possible. Samples should be viewed from a minimum distance of 12 feet.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Carefully pack, handle, and ship masonry units and accessories strapped together in suitable packs or pallets or in heavy cartons.

B. Deliver material to the site in the Manufacturer's original and unopened containers and packaging, bearing labels which identify the type and names of the products and Manufacturers. Unload and handle to prevent chipping and breakage.

C. Protect masonry materials and aggregates during storage and construction from excess wetting by rain, snow or ground water, and from staining or inter mixture with earth or other types of materials.

D. Protect grout, mortar and cement products from deterioration by moisture and temperature. Store in a dry location or in waterproof containers. Protect liquid components from freezing.

1.10 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

B. Repoint mortar joints and repair masonry only when air temperature is between and 40 and 90 deg F and is predicted to remain so for at least 7 days after completion of work.

C. Erect temporary covers over pedestrian walkways and at building entrances and exits which will remain active as the work progresses.

D. Prevent mortar from staining the face of surrounding masonry and other building surfaces, immediately remove any which falls or spills. Protect sills, ledges and projections from mortar droppings.

E. Coordinate masonry removal and restoration with the installation of new metal and membrane flashings

1.11 GUARANTEE

A. Provide a Contractor's written Guarantee which warrants that all work will remain free of material and workmanship defects and in a watertight condition for a two year period beginning upon Final Completion:
   1. Defective work includes but is not limited to the following types of failure: leakage, delamination, lifting, loosening, splitting, cracking, and undue expansion.
   2. The Contractor's Guarantee shall provide that the Contractor will make the repairs and modifications necessary to enable the work to perform as warranted at his own expense:
   3. The Guarantee shall include the removal and replacement of items or materials installed as part of the original work, if removal is needed to affect guaranteed repairs.

B. The Contractor's Guarantee shall be issued no more than 30 days before the satisfactory completion of punch list work.

PART 2 PRODUCTS

2.1 CLEANING MATERIALS

A. Cleaning Agent:ProSoCo Sure Klean
   1. Application: General Cleaning Limestone, precast and masonry.
      a. Pre-Wash: ProSoCo Sure Klean 766 Limestone & Masonry Prewash
      b. Afterwash:ProSoCo Sure Klean 766 Limestone & Masonry Afterwash

B. Paint Removal: Heavy-Duty Paint Remover
   1. Peel Away 1, Dumond, 83 General Warren Blvd. • Suite 190 • Malvern, PA 19355., Phone: (609) 655-7700.
   2. Environmentally safe removal system for lead-based coating systems.
   3. Water-based, zero VOC.
   4. Non-flammable; no harmful odors or fumes.

2.2 MORTAR MATERIALS

A. Use only factory premixed packaged dry materials for mortar and grout, with addition of water only at project site.

B. Mortar Color: Match existing.

C. Mortar Mix Designs: ASTM C270, Property Specification.
   1. Type N for setting mortar.
   2. Exterior, Loadbearing Masonry: Type N.
   3. Exterior, Non-loadbearing Masonry: Type N.
      a. Average compressive strength at 28 days: 750 psi.
   4. Exterior Repointing Mortar: Type N with maximum 2 percent ammonium stearate or calcium stearate per cement weight.
   5. Aggregate for Mortar: ASTM C 144; except for joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
   6. Aggregate for Grout: ASTM C 404.

2.3 CASTING MORTAR

A. For casting to replicate limestone, precast concrete, and brick.
   1. Product: M150 MortarJahn Casting Mortars, distrbuted by Cathedral Stone® Products, Inc., 7266 Park Circle Drive, Hanover, MD 27016; tel. (410) 782-9150; fax. (410) 782-9155; website: www.cathedralstone.com.

2.4 MASONRY MATERIALS

A. Brick shall be clay or shale, ASTM C216, Type FBS , solid. Brick shall be tested for efflorescence in accordance with ASTM Test Methods C67 and the rating shall be ”Not Effloresce”.
   1. Use 100% solid brick over exterior relieving angles/lintels or other brick projections on exterior face of building. (Use of solid brick with cores is acceptable if cores are filled solid with mortar and the cores are not visible to view.
   2. Include special bricks for corners, and other special shapes, to match the color, surface texture, shape and size of existing adjacent brick.
   3. Face Brick and Accessories: Provide face brick and accessories, including specially molded, ground, cut, or sawed shapes where required to complete masonry restoration work.
   4. Provide units with colors, surface texture, and physical properties to match existing units in size and shape.
   5. For sample that exhibits a range of colors, provide brick that matches that range rather than brick that matches an individual color within that range.
   6. Provide special shapes as indicated and required to match existing.

2.5 MASONRY ANCHORS

A. All reinforcement and anchors located in exterior walls shall be stainless steel.

B. Anchors: Type and size indicated, or if not indicated, to match existing in size and type. Fabricate anchors and dowels from Type 302 or Type 304 stainless steel.

C. Stone Anchor Rod: Stainless steel ¼” diameter, length as required.

D. Repair and Restoration Anchors: mechanical anchoring system used re-connect existing veneers to backup, with 360 Brass expanders with a Type 304 St/Steel shaft and 300 St/Steel hardware

E. Restoration Anchors: Friction Pinning Anchor for anchoring existing brick to backup masonry, stainless steel, 5/16" x 7-3/4".

F. Dowels: Stainless Steel conforming to ASTM A 580 AISI Type 304.
   1. No.155 by Heckman Building Products. Size and thickness as required.
   2. No. 355 Spring-Loaded Dowels by Heckman Building Products. Size and thickness as required.

2.6 ACCESSORIES

A. Sealant Refer to Section 07 9200 - Joint Sealants.

B. Weeps: Cellular, honeycomb design, polypropylene weep vents for embedding in masonry wall mortar joints;
   1. Material: High density polyethylene and impervious to water and resistant to UV degradation.
   2. Hohmann & Barnard, Inc. #QV - Quadro-Vent.

C. Paint: Refer to Section09 9113 - Exterior Painting.

D. Corrosion Inhibitor: Cementitious epoxy resin compensated 3-component, solvent-free, coating material with corrosion inhibitor, used as bonding primer and reinforcement corrosion protection.
   1. Sika® Armatec®-110 EpoCem

E. Joint Filler: Closed cell neoprene; 3/8" inch wide x 3" wide x by maximum lengths available. Provide tear strip to permit sealant joint.
   1. Manufacturers:
      a. Hohmann & Barnard, Inc; Product MS: www.h-b.com.

2.7 EMBEDDED FLASHING MATERIALS

A. Sheet Metal Flashings and Trim - Refer to Section 07 6200 - Sheet Metal Flashing and Trim.

B. Metal Flashing Materials:

C. Sheet Copper Flashing: Type: 5 layers, flexible flashing consisting of copper sheet bonded on both sides to asphalt coated glass fabric; Advanced Copper Fabric as manufactured by Advanced Building Products, Inc.

1. Characteristics: Waterproof, flexible, high tensile strength, resistant to mortar acid and alkali action, allowing minimum thermal cold flow through structure, and textured surface promoting mortar joint bonding.
2. Coating: Asphalt bonded to copper and covered with coarsely woven, heavy glass fabric reinforcing.

D. Rubberized-Asphalt Flashing: Composite flashing product consisting of a pliable, adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of not less than 40 mils.

1. Available Products:
   a. Carlisle Coatings & Waterproofing; CCW-705-TWF Thru-Wall Flashing.
   b. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Perm-A-Barrier Wall Flashing.
   c. Heckmann Building Products Inc.; No. 82 Rubberized-Asphalt Thru-Wall Flashing.
   d. Hohmann & Barnard, Inc.; Textroflash.

2.8 MORTAR MIXES

A. Comply with ASTM C 270, Proportion Specification

1. Setting mortar, use Type N.
2. Brick Replacement Mortar: Type S .
3. Pointing mortar Type N.
   a. Verify strength of existing mortar. New mortar shall not exceed strength of existing mortar.

B. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer

1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material

C. Do not use admixtures of any kind in mortar, unless otherwise indicated.

D. Mortar Proportions: Mix mortar materials in the following proportions

1. Brick Replacement Mortar: Comply with ASTM C 270, Proportion Specification, Type S.

E. Casting Mortar: Measurement and Mixing: Follow manufacturer's instruction

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that surfaces to be cleaned are ready for work of this section.

3.2 PREPARATION

A. Protect surrounding elements from damage due to restoration procedures.

B. Separate areas to be protected from restoration areas using means adequate to prevent damage.

C. Cover existing landscaping with tarpaulins or similar covers.

D. Mask immediately adjacent surfaces with material that will withstand cleaning and restoration procedures, including:
   1. Windows.
   2. Soft joints and sealants.
   3. Door frames.
   4. Vents, louvers and grills

E. Close off adjacent occupied areas with dust proof partitions.

F. When using cleaning methods that involve water or other liquids, install drainage devices to prevent runoff over adjacent surfaces unless those surfaces are impervious to damage from runoff.

G. Do not allow cleaning runoff to drain into sanitary or storm sewers.

3.3 BRICK REMOVAL AND REPLACEMENT

A. Carefully remove bricks on a piece by piece basis. Cut out full units from joint to joint and to permit replacement with full size units. Clean the edges of remaining bricks, to remove all mortar, dust, and loose debris in preparation for rebuilding

B. Cut out damaged and deteriorated masonry with care in a manner to prevent damage to any adjacent remaining materials.

C. Simultaneously remove limited sections of existing masonry; support and protect masonry remaining next to and above the removal areas

D. Support structure as necessary in advance of cutting out units.

E. The Contractor is responsible for performing Work in a safe manner. Provide temporary shoring or other supports as required to prevent displacement of existing masonry that is to remain. Perform the removal Work with such care as may be required to prevent failure of the masonry or damage to adjoining masonry that is to remain

F. Cut away loose or unsound adjoining masonry, mortar, and stone to provide firm and solid bearing for new work. Do not use impact type tools, use only rotary type grinders.

G. Use power tools only after test cuts determine no damage to masonry units will result. Provide vacuum attachment for all grinding/cutting equipment for dust control purposes.

H. Do not damage masonry units.

I. Build in new units following procedures for new work. .

J. Ensure that anchors, ties, reinforcing, and flashings are correctly located and built in.

K. Install new cap flashings, and wall flashing extensions, properly connected to the existing wall flashings, as indicated on the drawings and specified elsewhere before installing new bricks

L. Install built in masonry work to match and align with existing, with joints and coursing true and level, faces plumb and in line. Build in all openings, accessories and fittings. Use a motor driven diamond blade saw to cut bricks with clean, sharp, unchipped edges.

M. Install through wall flashings properly connected to the existing wall as indicated, before installing the new units.

N. Wet brick which have initial rates of absorption (suction) of more than 30 grams per 30 square inches per minute, (in accordance with ASTM C 67), to ensure the bricks are nearly saturated with water, but surface dry when laid

O. Lay replacement brick with completely filled bed, head, and collar joints. Butter ends with sufficient mortar to fill head joints and shove into place. Wet both replacement and surrounding bricks that have ASTM C 67 initial rates of absorption (suction) of more than 30 g/30 sq. in. per min.. Use wetting methods that ensure that units are nearly saturated but surface is dry when laid. Maintain joint width for replacement units to match existing joints.

P. Rake out mortar used for laying brick before mortar sets and point new mortar joints in repaired area to comply with requirements for repointing existing masonry, and at same time as repointing of surrounding area

Q. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brick work

3.4 REPOINTING

A. Perform repointing prior to cleaning masonry surfaces.

B. Repointing of existing joint where joint reinforcing is exposed, shall be as indicated and detailed on drawings.

C. Cut out loose or disintegrated mortar in joints to minimum 3/4" inch depth or until sound unweathered mortar is reached. Use power chisels die grinder, circular grinder or other power equipment approved by the Owner's Representative and Architect.

1. Test mock-up shall be performed in area directed by the Owner's Representative. Contractor shall not proceed until mock-up and methods are approved.
2. Use power tools only after test cuts determine no damage to masonry units will result.
3. Provide vacuum attachment for all grinding/cutting equipment for dust control purposes.

D. Do not damage masonry units. Do not spall the edges of adjoining masonry or widen the joints. Replace any masonry which is damaged.

E. When cutting is complete, remove dust and loose material brushing and with water jet.

F. Pack tightly in maximum 1/2 inch layers. Form a smooth, compact concave joint to match existing.

G. Slightly recess pointing mortar from the faces of the masonry units where the units have rounded edges. Do not spread mortar on the edges or faces of the masonry. Do not featheredge the mortar.

H. Tool repointed joints to match the appearance of adjoining joints when the mortar is thumbprint hard. Remove excess mortar from the edges of the joints with a soft bristle brush

I. Moist cure for 72 hours.

J. Clean repointed area minimum 24" each side of repointed joints.

1. Immediately after the mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter using stiff nylon or bristle brushes and clean water, spray applied at low pressure.
2. Do not use metal scrapers or brushes. Do not use acid or alkali cleaning agents

K. Remove efflorescence by dry brushing followed by wet brushing.

3.5 SETTING CAST STONE IN MORTAR

A. Set cast stone as indicated on Drawings. Set units accurately in locations indicated with edges and faces aligned according to established relationships and indicated tolerances.

1. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure units in place.
2. Shim and adjust anchors, supports, and accessories to set cast stone in locations indicated with uniform joints.
3. Set cast stone supported on clip or continuous angles on resilient setting shims. Use material of thickness required to maintain uniform joint widths. Hold shims back from face of cast stone a distance at least equal to width of joint.
4. Wet joint surfaces thoroughly before applying mortar or setting in mortar.
5. Drench units with clear water just before setting.

B. Set units in full bed of mortar with full head joints, unless otherwise indicated. Build anchors and ties into mortar joints as units are set.

1. Set dowels with epoxy grout.
2. Fill collar joint solid as units are set.

3. Build concealed flashing into mortar joints as units are set.
4. Install weeps as manufacturer's instructions.
5. Keep head joints in coping and other units with exposed horizontal surfaces open to receive sealant.
6. Keep joints at shelf angles open to receive sealant.

C. Rake out joints for pointing with mortar to depths of not less than ¾ inch (19 mm). Rake joints to uniform depths with square bottoms and clean sides. Scrub faces of units to remove excess mortar as joints are raked.

D. Point mortar joints by placing and compacting mortar in layers not greater than 3/8 inch (10 mm). Compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.

E. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness, unless otherwise indicated.
1. For coping joints provide backer rod and sealant for all joints as indicated..

F. Fill anchor holes with epoxy grout.

G. Keep joints free of mortar and other rigid materials. Remove temporary shims and spacers from joints after anchors and supports are secured in place and cast stone units are anchored. Do not begin sealant installation until temporary shims and spacers are removed.
1. Form open joint of width indicated, but not less than 3/8 inch.

H. Prepare joints and apply sealant of type and at locations indicated to comply with applicable requirements in Division 7 Section "Joint Sealants."
1. Prime cast stone surfaces to receive sealant shall be raked out 3/8" deep and install bond breaker tape in joints before applying sealant.

3.6 UNUSED ANCHOR REMOVAL

A. Remove masonry anchors, brackets, wood nailers, and other extraneous items no longer in use unless identified as historically significant or indicated to remain.
1. Remove items carefully to avoid spalling or cracking masonry.
2. Where directed, if an item cannot be removed without damaging surrounding masonry, do the following:
   a. Cut or grind off item approximately 3/4 inch beneath surface and core drill a recess of same depth in surrounding masonry as close around item as practical.
   b. Immediately paint exposed end of item with two coats of antitrust coating, following coating manufacturer's written instructions and without exceeding manufacturer's recommended dry film thickness per coat. Keep paint off sides of recess.
3. Patch the hole where each item was removed unless directed to remove and replace the masonry unit

3.7 LINTEL REPLACEMENT

A. Replace lintels as follows:
1. Abate asbestos flashing and lead paint, where indicated.
2. Remove existing masonry as required to expose lintel and supporting structure.
3. Remove existing lintel, plates, clips, etc.
4. Clean and refurbish existing steel support beam.
5. Weld or bolt new lintel and clips to existing steel structure.
6. Provide rust control coating over all concealed steel in accordance with manufacturer's instructions..
7. Install conceal flashing over lintel and steel structure in accordance with manufacturer's instructions.
8. Provide two finish coats paint over exposed to view steel. Refer to Section 09 9113 - Exterior Painting.

3.8 LINTEL RESTORATION

A. Wire or power brush all exposed surfaces.

B. Provide prime coat and two finish coats of paint

3.9 PRE CAST REPAIRS AND PATCHING

A. All repairs shall be performed by applicators approved by the manufacturer.

B. Remove all loose and deteriorated masonry from the repair area using manual or pneumatic cutting tools.

C. The area to be repaired should be cut to provide a minimum of 1/4" depth. Do not install repairs that have a feathered edge.

D. Wash the prepared surface with clean water and a bristle brush to remove dust from the pores

E. Mixing ratio is approximately 5 to 5 1/2 parts powder to 1 part water by volume, depending on temperature and humidity to a consistency of damp sand.

F. Moisten the substrate using clean water. Apply mortar to a glistening wet surface on vertical applications and a well dampened surface (with no pooling water) on horizontal applications. Do not let the surface dry. If surface dries repeat the application procedure.

G. The mortar should be mixed with water to the consistency of wet putty (Peanut Butter Consistency) . Apply the "Peanut Butter" coat to the glistening wet substrate approximately 1/8 inch thick. (Important - To achieve proper bond, the "Peanut Butter" coat must not dry out prior to application of Mortar.

H. Build the material out beyond the surface of the original stone

I. After achieving initial set, scrape away excess mortar until the desired profile is reached.

J. Where necessary, anchor using threaded stainless steel dowels (or other acceptable anchors)

K. Mist cure repairs using clean water for at least a 72 hour period.

3.10 RECAULKING

A. Carefully remove existing sealant and back up material from within masonry control / expansion joints to a minimum depth of 1-1/2 inches, and from the surface of the masonry at the edges of the joints.
   1. Use hand tools and work to avoid damage to the adjoining masonry.
   2. Replace adjoining masonry damaged during sealant removal work.

B. Install new backer rod without puncturing or tearing it, to snuggly fill the joint, at a depth to yield a sealant joint twice as wide as it is deep.

C. Do not twist backer rods, or install multiple pieces of undersized rod, when the correct rod is not on-site.

D. Mask the edges of all joints prior to installing sealant.

E. Push sealant into the joint to completely fill it, tool the sealant to produce a slightly concave, neat recessed joint, and remove joint masking before excess sealant sets

3.11 WEEPS/CAVITY VENTS

A. Install weeps where indicated on drawings.

3.12 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
   1. Install flashing entire face of the exterior face of the interior CMU unit.
   2. Extend flashings full width at such interruptions and at least 4 inches into adjacent masonry or turn up at least 8 inches to form watertight pan at non-masonry construction.
   3. Remove or cover protrusions or sharp edges that could puncture flashings.
   4. Seal lapped ends and penetrations of flashing before covering with mortar.

B. Extend rubber flashings down and under masonry to within 1/4 inch of exterior face of masonry.

C. Lap end joints of flashings at least 4 inches and seal watertight with mastic or elastic sealant.

3.13 CLEANING EXISTING BRICK MASONRY

A. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods being used. Extraneous substances include paint, calking, asphalt, and tar

B. Test surface for cleaning effectiveness.

C. Cleaning Detergent: Brush clean masonry surfaces at locations with cleaning agent in accordance with the manufacturer's instructions. Saturate masonry with clean water and flush loose mortar and dirt.

D. Masonry Washing: Apply 400-1000 psi pressure, water flow rate of 6-8 gallons per minute, to masonry surfaces , maintaining uniform depth and surface texture throughout. Use 15-45 degree fan spray. If required heat water to 150-180 degree.

E. Application: Work from bottom to top, pre wetting surfaces
   1. Let dwell 5 to 15 minutes. Do not let let cleaner dry on the surface.
   2. Work from bottom to top and rinse
   3. Repeat steps as required.

3.14 CLEANING NEW BRICK MASONRY

A. Test surface for cleaning effectiveness.

B. Clean surfaces and remove large particles with wood scrapers, brass or nylon wire brushes.

C. Protect area below cleaning operation and keep masonry soaked with water and flushed free of acid and dissolved mortar continuously for duration of cleaning.

D. Before solution dries, rinse and remove acid solution and dissolved mortar, using clean, pressurized water.
   1. Apply 400-1000 psi pressure, water flow rate of 6-8 gallons per minute, to masonry surfaces , maintaining uniform depth and surface texture throughout. Use 15-45 degree fan spray. If required heat water to 150-180 degree.
   2. Let dwell 3 to 5 minutes. Do not let let cleaner dry on the surface. Fresh water rinse the surfaces below areas being cleaned to prevent streaking.
   3. Repeat steps as required

3.15 CLEANING PRE CAST STONE

A. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods being used. Extraneous substances include paint, calking, asphalt, and tar

B. Test surface for cleaning effectiveness
   1. Use in concentrate during initial testing.

C. Pre wet areas with clean water, working from the bottom to the top.

D. Apply heavy coating using deep napped synthetic roller or nylon brush. Spray equipment. if used shall be as approved by the manufacturer.
   1. Let dwell 30 to 120 minutes. Do not let let cleaner dry on the surface.
   2. Pressure rinse, from bottom to top. Apply 400-1000 psi pressure, water flow rate of 6-8 gallons per minute, to masonry surfaces , maintaining uniform depth and surface texture throughout. Use 15-45 degree fan spray. If required heat water to 150-180 degree.

E. Apply solution of after-wash as recommended by the manufacturer.
   1. Let dwell 3 to 5 minutes. Do not let let cleaner dry on the surface.
   2. Fresh water rinse the surfaces below areas being cleaned to prevent streaking.

3.16 PAINT REMOVAL

A. Preparation:
   1. Pressure wash to remove all loose coatings. Allow substrate to dry before applying removal material.

2. Protect and cover all areas, vegetation and surfaces not designated to be stripped including adjoining surfaces.
3. Test Patch: Perform test area on type of substrate and paint coating prior to full application.
4. Use product in temperatures above 50° degrees Fahrenheit and below 90° degrees Fahrenheit.

B. Application:
1. Apply accordance with manufacturer's instructions.
2. Working in small manageable areas. Only strip what you can rinse before the remover dries, usually a 3' X 3' area.
3. Trowel or spray application.
4. Cover all of the paste with laminated paper lightly smooth out most air pockets.
5. Remove paste and rinse before the remover dries.
6. Apply neutralizer provided by the manufacturer after the surface is completely dry but not less than 48 hours.
7. When the surface is completely dry, test with enclosed pH test strips according to instructions on the provide with neutralizer. Repainting can occur when pH range is between a 5 and 8 and the moisture content is below 12%.
8. Dispose of paper, paste remover and dissolved coatings according to federal, state and local regulations.
9. Dispose of paper, paste remover and dissolved coatings according to federal, state and local regulations.

3.17 FIELD QUALITY CONTROL

A. Inspectors: Owner may engage qualified inspectors to perform inspections and prepare test reports. Allow inspectors use of lift devices and scaffolding, as needed, to perform inspections.

B. Notify Owner's Representative, Architect, and Construction Manager in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until inspectors have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location.

3.18 CLEANING

A. Immediately remove stains, efflorescence, or other excess resulting from the work of this section.

B. Remove excess mortar, smears, and droppings as work proceeds and upon completion.

C. Clean surrounding surfaces.

END OF SECTION

SECTION 05 5000
METAL FABRICATIONS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. Steel framing and supports for associated with roofing, and similar items indicated on drawings.

B. Steel framing and supports for applications where framing and supports are not specified in other Sections.

C. Loose lintels.

D. Vault hatch.

1.3 RELATED REQUIREMENTS

A. Section 01 4000 - Quality Requirements for testing requirements and procedures.

B. Division 7 for roofing, and sheet metal flashings for roof penetrations and installations associated with steel support roof framing.

C. Section 07 7200 - Roof Accessories.

D. Section 09 9113 - Exterior Painting: Paint finish.

1.4 REFERENCE STANDARDS

A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2014 (2015 Errata).

B. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.

C. ALI A14.3 - Ladders - Fixed - Safety Requirements; 2014.

D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.

E. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2018.

F. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

G. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.

H. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2013.

I. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014 (Editorial 2017).

J. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.

K. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.

L. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2018.

M. ASTM B85/B85M - Standard Specification for Aluminum-Alloy Die Castings; 2018.

N. ASTM B211 - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2012.

O. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.

P. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).

Q. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2014, with Errata.

R. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

S. SSPC-SP 2 - Hand Tool Cleaning; 1982, with Editorial Revision (2004).

1.5 PERFORMANCE REQUIREMENTS

A. Structural Performance of Ladders: Provide ladders capable of withstanding the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.

B. Thermal Movements: Provide exterior metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces

1.6 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: For the following:

1. Lintels
2. Vault hatch.

C. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

D. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.

1.7 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified steel fabricator that is accredited by IAS AC172.

B. Welding: Qualify procedures and personnel according to the following:

1. AWS D1.1, "Structural Welding Code--Steel."

1.8 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
2. Provide for trimming and fitting at site.

1.9 COORDINATION

A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

PART 2 PRODUCTS

2.1 MATERIALS - STEEL

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.

C. Plates: ASTM A283/A283M.

D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.

E. Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, galvanized to ASTM A 153/A 153M where connecting galvanized components.

F. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

G. Touch-'Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.2 MATERIALS - STAINLESS STEEL

A. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type 316L.

B. Stainless-Steel Bars and Shapes: ASTM A 276, Type 316L.

C. Sheet, Strip, Plate, and Flat Bar: ASTM A 666, Type 316L.

D. Bars and Shapes: ASTM A 276, Type 316L

2.3 FABRICATION

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work

D. Fit and shop assemble items in largest practical sections, for delivery to site.

E. Fabricate items with joints tightly fitted and secured.

F. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Do not use ferrous material and equipment on stainless steel components.
3. Obtain fusion without undercut or overlap.
4. Remove welding flux immediately.
5. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface

G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes es where water may accumulate

H. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

I. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.4 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.

B. Expansion Anchors: Anchor bolt and sleeve assembly with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
   1. Material for Anchors in Exterior Locations: Alloy Group 1 stainless-steel bolts complying with ASTM F 593 and nuts complying with ASTM F 594

2.5 FABRICATED ITEMS

A. Lintels: As detailed; Prime paint interior galvanized for exterior finish.
   1. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Weld adjoining members together to form a single unit where indicated
   2. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span but not less than 8 inches, unless otherwise indicated.
   3. Galvanize loose steel lintels located in exterior walls.

B. Vault Hatch
   1. Single leaf panel shall be provided as follows:
      a. Size: As shown on drawings.
      b. Panel: 1/4" aluminum diamond pattern.
      c. Frame: 1/4" aluminum channel with recessed anchors.
      d. Hinges: Heavy duty forged stainless steel hinges with stainless steel pins.
      e. Latch: Standard slam lock with stainless steel lock strike.
      f. 1-1/2" drain coupling.
      g. Automatic hold open arm.
      h. Stainless steel spring lifting mechanism.
      i. Finish: Mill Finish.
      j. Hardware: Type 316 stainless steel.
   2. Acceptable Manufacturers:
      a. Bilco Company, TypeJ-J-AL

2.6 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

2.7 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.

2.8 FINISHES - STEEL

A. Refer to Section 09 9113 Exterior Painting.

B. Prepare surfaces to be primed in accordance with SSPC-SP2.

C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

D. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.

E. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.9 STAINLESS-STEEL FINISHES

A. Plate and Sheet: ASTM A 666, Type 316L

B. Use only stainless steel tools, grinders and polishing materials.

C. Remove tool and die marks and stretch lines or blend into finish.

2.10 FABRICATION TOLERANCES

A. Maximum Offset Between Faces: 1/16 inch.

B. Maximum Misalignment of Adjacent Members: 1/16 inch.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.2 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.3 INSTALLATION

A. Install fabricated items as per manufacturer's instructions

B. Install items plumb and level, accurately fitted, free from distortion or defects.

C. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

D. Set vault hatch on slight pitch toward drain corner.

1. Before anchoring in place open and close door verify door in the closed position rests on the frame all around.
2. Do not reduce 1 1 /2" drain pipe.

E. Field weld components as indicated on shop drawings.

F. Perform field welding in accordance with AWS D1.1/D1.1M.

G. Obtain approval prior to site cutting or making adjustments not scheduled.

H. After erection, prime welds, abrasions .

3.4 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 06 1000
CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. All plant, labor, materials, equipment, testing and services necessary to complete the work shown on the drawings, schedules and notes, as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but not limited to, the following:

1. Roof related wood nailers, blocking, shims, plywood, soffits, fascia boards and cornice moldings.

2. Light gauge metal framing.

3. Re-secure existing roof related blocking; remove and separate multiple layers of blocking, and secure each layer individually.

B. Related Requirements

1.	Masonry Maintenance	- Section 04 0100
2.	EPDM Roofing	- Section 07 5323
3.	Sheet Metal Flashing & Specialties	- Section 07 6200
4.	Roof Accessories	- Section 07 7200

1.3 QUALITY ASSURANCE

A. Installer Qualifications:

1. A firm (Installer) with at least 5 continuous years experience performing work similar to that required for this project, employing personnel skilled in the work specified.

   a. The Installer shall directly employ the personnel performing the work of this section.

   b. The Installer shall have a full time supervisor on the roof when work is in progress. The Supervisor shall have a minimum of 5 years experience with work similar in nature and scope to this project, and speak fluent English.

      1. Submit the supervisor’s resume upon request.

2. The Installer shall provide a reference list of at least three previously completed projects of comparable size and similar design, within fifty miles of this project, which may be observed by representatives of the Owner:

   a. The reference list shall include at a minimum, the completion date, a description of the work performed, the Owner’s name - contact person - phone number and address and the Architect’s name - contact person and phone number.

   b. Submit the reference list upon request.

B. Material Quality: Obtain each type of material from a single source to ensure consistent quality, color, pattern, and texture.

C. Pre-Construction Conference: Attend the pre-construction meeting and discuss how and when carpentry work will be performed and coordinated with other work, and how the building will be kept watertight as work occurs.

1.4 SUBMITTALS

A. Submit the following items far enough in advance to obtain approval prior to performing any work on site:

1. A pre-work site and building inspection report with photos, to document conditions before work starts on site.

2. Manufacturer's technical literature for all materials.

3. Test reports and certifications substantiating compliance with specification requirements if requested by the Architect.

4. 2 foot long on-site samples which show the size, shape, configuration and method of fastening for all wood blocking assemblies, and which show how the blocking assemblies will relate to and fit on adjoining work.

B. Simultaneously provide all technical submittals needed for this project, for all technical sections, collated by section. Incomplete submittals will not be reviewed.

1. Submittals shall be prepared and made by the firm that will perform the actual work.

2. Provide electronic submittals via an on-line submittal exchange program if one is established for this project; if an on-line program isn't established, provide the submittals on portable USB drives in pdf format, organized in folders by Section.

C. Safety Data Sheets: Simultaneously provide all Safety Data Sheets needed for this project, for all specification sections - collated by section, in three ring binders. Provide two binders for each building.

D. Payment requisitions will not be processed until all submittals are received and approved.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver and store materials dry at all times. Cover with tarps and protect against exposure to weather and contact with damp or wet surfaces.

B. Do not overload the structure when storing material on the roof.

C. Protect roof surfaces where material and equipment are placed on them, and where construction traffic occurs, with 6 mil fire retardant polyethylene, covered with 1-1/2 inch thick foam insulation, overlaid with 2 by 10 wooden planks.

D. Do not overload the structure when storing materials on the roof.

1.6 GUARANTEE

A. Provide a written Contractor's Guarantee which guaranties that all work will remain free of material and workmanship defects and in a watertight condition for five years beginning upon Final Completion:

1. Defects include but are not limited to the following: leakage, delamination, lifting, loosening, splitting, cracking, joint separation and movement.

2. The Contractor shall make the repairs and modifications necessary to enable the work to perform as guaranteed at his own expense:

3. Guarantee coverage shall include removing and replacing items installed as part of the original work, if removal is needed to make repairs.

B. Provide one Guarantee that covers “all work performed” when a single contractor is awarded work specified in multiple Sections.

C. The Guarantee shall take effect no more than 30 days before the satisfactory completion of all punch list work.

D. The Contractor’s Surety Company may add a rider to the Performance Bond which clarifies that Performance Bond Coverage expires two years after Final Completion; i.e., Performance Bond Coverage does not run for the entire five year term of the Contractor’s Guarantee.

PART 2 - PRODUCTS

2.1 MATERIALS

A. WOOD, including shims, nailers, blocking, furring and similar members, in the sizes indicated, worked into the shapes shown, and as follows:

1. Lumber: Douglas Fir dimension lumber, free of large knots and other imperfections.

2. Plywood: Exterior grade APA rated Type CDX underlayment plywood.

3. Beveled Siding: Utility grade cedar, redwood, or synthetic siding, 1/2 inch by 6 inches and 3/4 inch by 10 inches wide, tapered to 1/8 inch thick.

B. METAL, including light gauge metal channel and stud sections factory formed of minimum 24 gauge cold rolled galvanized steel.

2.2 FASTENERS

A. Hot dipped galvanized steel, stainless steel, or steel covered with a proprietary rust inhibiting coating.

1. Do not use un-coated steel nails. Remove and replace carpentry components installed with un-coated steel nails.

B. Use screws wherever possible, minimum size diameter #12. If nails are used they shall be annular ring shank type.

1. Do not use dry wall screws to secure wood blocking assemblies. Remove and replace carpentry components installed with drywall screws.

2.3 CARPENTRY ACCESSORIES

A. Gypsum board & related accessories: 5/8 inch thick Type X Firecode gypsum board, galvanized drywall screws, asbestos free factory pre-mixed joint compound, joint tape, and galvanized steel J, L and corner beads.

B. Fiberglass batt insulation: un-faced fiberglass insulation, minimum thickness 6 inches, and as needed to fill the expansion joints.

C. Rockwool batt insulation: un-faced blown fiber insulation, minimum thickness 6 inches, and as needed to fill the expansion joints.

PART 3 - EXECUTION

3.1 INSTALLATION – GENERAL

A. Coordinate carpentry work with the installation of the roofing system, insulation, flashings, and other similar items.

B. Shim and set carpentry work plumb and true, except provide slope at the top surfaces of horizontal members as indicated.

C. Stagger joints in built up assemblies at least 2 feet to obtain maximum strength. Provide the shapes needed and adjust wood blocking to suit the existing conditions and achieve full bearing and secure attachment. Discard defective material, and pieces which are too small, and fabricate the work with a minimum of joints and an optimum joint arrangement.

D. Securely attach carpentry work to resist a force of 275 pounds per lineal foot in any direction. Countersink all fasteners flush unless otherwise shown.

E. Space fasteners to achieve adequate holding power, and generally 12 inches apart. :

1. Space nails in wood blocking 8 inches apart.
2. Install two rows of fasteners on blocking wider than 5 inches.

F. Fit carpentry work neatly scribed and cut to fit within 1/8 inch of adjoining materials. Position furring, nailers, blocking, shims and similar supports for the proper attachment of subsequent work.

G. Fasten wood blocking to underlying steel members at gypsum and structural wood fiber deck areas, with self tapping screws. Pre-drill holes in the steel members or utilize self drilling/tapping screws.

H. Fasten wood and metal blocking assemblies to metal decks with #12 screws.

I. Fasten wood and metal blocking assemblies to concrete decks and masonry walls with 1/4 inch diameter Spike or Drive fasteners. Pre-drill the holes.

3.2 CLEANING, PROTECTION AND WATERTIGHTNESS

A. Inspect the interior and exterior of the building and grounds, and submit a written report with photos to document any pre-existing leakage or damage, prior to performing any work.

B. The Owner will conduct a similar inspection at the completion of the work, and the Contractor will be charged for all leaks and damage that weren’t documented in the Contractor’s report, or repaired to the Owners satisfaction at the Contractor’s expense.

C. Provide any equipment, material and labor necessary to protect the site, the building, its contents and occupants, pedestrians, and surrounding landscaped and paved areas from damage due to the construction work or from inclement weather during construction.

D. Do not perform work during inclement weather. Protect incomplete work and the building from damage by inclement weather - which may occur unexpectedly. Make all work areas watertight at the end of each day's work.

E. Clean up all litter, refuse, rubbish, scrap materials and debris at least twice a day; at noon and at the end of the work day, so the roof and site are neat, orderly and workmanlike. Place the debris in a dumpster, and remove the dumpster from the site as soon as it is full or no longer being used.

F. Carefully and thoroughly clean the entire roof to remove all residual debris when all work is complete. After cleaning the roof, thoroughly clean all drain sumps, drain lines, leader heads and leaders. Do not allow debris to enter the drainage system.

END OF SECTION

SECTION 07 1800
TRAFFIC COATINGS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. Polyurethane traffic coating system for waterproofing and traffic surface over existing concrete.

1.3 RELATED REQUIREMENTS

A. Section 07 9200 - Joint Sealants.

1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Include product characteristics and limitations. Identify dissolving solvents, fuels, and potential destructive compounds.

1. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
2. Drawings or catalog illustrations in sufficient detail to show installation and interface of the work of this Section with the work of adjacent trades.

C. Manufacturer's Installation Instructions: Include special field conditions required to install traffic membrane and potential incompatibilities with adjacent materials.

D. Maintenance Data: Include procedures for stain removal, repairing surface, and cleaning.

E. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Yonkers Public Schools's name and registered with manufacturer.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with not less than five (5) years of documented experience.

B. Applicator Qualifications: Company specializing in performing installation of traffic membrane, with minimum three (3) years documented experience and approved by manufacturer.

1. Installer shall designate a single individual as project foreman who shall be on site at all times during installation.

C. Field Adhesion Test Method: Use manufacturer's standard field adhesion test methods and methods to verify proper priming and surface preparation techniques required to obtain optimum adhesion. Evaluate and report results of field adhesion testing.

D. Waterproofing Terminology: Refer to ASTM D1079 and Sikalastic Deck Pro Applicator Manual for definitions of waterproofing terms related to this section.

1.6 MOCK-UP

A. Provide mock-up, feet long by feet wide, with membrane system applied to representative substrate.

B. Locate where directed.

C. Mock-up may remain as part of the Work.

1.7 PRE-INSTALLATION CONFERENCE

A. Prior to scheduled commencement of installation and associated work, conduct a meeting at the project site with the installer, Architect and Construction Manager, manufacturer’s representative and any other

persons directly involved with the performance of the Work. The Installer shall record conference discussions and to include decisions and agreements reached (or disagreements), and furnish copies of recorded discussions to each attending party. The main purpose of this meeting is to review foreseeable methods and procedures related to the Work.

1.8 REGULATORY REQUIREMENTS

A. Applicable Regulations: Comply with local code and requirements of authorities having jurisdiction. Do not exceed VOC regulations as established by the State of New York in which they are being installed; including total VOC content, in grams per liter, for all system components (i.e. primers, adhesives, coatings, and similar items.)

B. Refer to Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions for additional requirements.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the job site in the manufacturer's unopened containers with all labels intact and legible at time of use. Handle and store materials in accordance with manufacturer's recommendations with proper precautions to ensure fitness of material when installed.

B. Maintain storage area at minimum ambient temperature of 55 degrees F.

C. Keep away from fire or open flame.

1.10 FIELD CONDITIONS

A. Do not install materials when temperature is below 50 degrees F or above 90 degrees F.

B. Maintain this temperature range, 24 hours before, during and 72 hours after application.

C. Restrict traffic from area where materials are being installed or are curing.

1.11 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Provide manufacturer’s standard warranty for each type of product. Include written testing documentation and test reports.

C. Correct defective Work within a two (2(year period after Date of Substantial Completion.

D. Include coverage for delamination of system from substrate.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Polyurethane Traffic Coating:

1. Basis-of-Design Manufacturer: Sika Corporation, 201 Polito Avenue, Lyndhurst NJ 07071. Toll Free 800-933-SIKA (7452), www.usa.sika.com. .
2. Substitutions: 01 6000 - Product Requirements.

2.2 TRAFFIC COATINGS

A. Pedestrian Traffic Coating: Sikalastic 710/715 Traffic System comprised of the following:

1. Primers :
   a. Sikalastic Primer (as a standard primer and for recoat applications and elevated moisture content up to 6% by Tramex).
   b. Sikalastic FTP water-based epoxy primer.
2. Sikalastic 710 Base one-component aromatic polyurethane base coat.
3. Sikadur 22 lo mod epoxy –Ultra Heavy Duty System Full broadcast.
4. Sikalastic 715 Top one-component aromatic polyurethane top coat.

B. Applied Total Dry Film Thickness Exclusive of Aggregate:

1. Heavy Pedestrian Traffic: 61 mils.

C. Aggregate:
   1. Standard Aggregate: Clean, rounded, oven dried quartz sand with a minimum gradation of 16-30 mesh or 20-40 mesh for pedestrian traffic, and a minimum hardness of 6.5 per the Moh's scale. Aggregate shall be supplied in pre-packaged bags and free of metallic or other impurities.

D. Fabric Reinforcement: Sikalastic Flexitape Heavy woven nylon reinforcement.

2.3 PERFORMANCE REQUIREMENTS

A. Base and Top Coats: Typical Physical properties complying with the following.

1.	Sikalastic	710 Base	715 Top
2.	Viscosity	6500 +/- 3000 cps	1500 +/- 500 cps
3.	Total Volume Solids (ASTM D2697)	71%	72%
4.	VOC Content (ASTM D2369)	240 g/l	243 g/l
5.	Tensile Strength (ASTM D412)	500 +/- 100 psi	3200 +/- 300 psi
6.	Elongation at Break (ASTM D412)	800 +/- 50%	500 +/- 50%
7.	Tear Resistance (Die C, ASTM D624)	250 +/- 25 pli	350 +/- 50 pli
8.	Hardness (ASTM D2240)	55 +/- 5 Shore A	85 +/- 5 Shore A

   9. Tests were performed with material and curing conditions at 75F and 50% relative humidity.

2.4 MOCK-UP

A. Provide mock-up, four (4) feet long by four (4) feet wide, illustrating coating.

B. Locate where directed.

C. Mock-up may remain as part of the Work.

2.5 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a two (2) year period after Date of Substantial Completion.

C. Warranty: Include coverage for bond to substrate.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that substrate is ready to receive work, surface is clean, dry and free of substances that could adversely effect bond.
   1. Notify YPS Office of Facilities Management in writing of any discrepancies. Commencement of the Work in an area shall mean Installer's acceptance of the substrate.

3.2 PREPARATION

A. Substrates shall be clean, dry, sound and free of surface contaminants, with an open texture. Remove all traces of dust, laitance, grease, oils, curing compounds, form release agents and foreign particles by mechanical means, such as milling, scarifying, or shot-blasting, as acceptable to the Architect. Blow surface free of dust using compressed air line-equipped with an oil trap. All projections, depressions and rough spots should be dressed off to achieve a level surface prior to the application.

B. Concrete should be cleaned and prepared to achieve a laitance and contaminant free, open textured surface by blast cleaning or equivalent mechanical means (CSP 3-4 per ICRI guidelines

C. Patch concrete substrate with filler to produce surface conducive to bond.

D. Protect adjacent surfaces.

3.3 INSTALLATION

A. Apply system materials in accordance with manufacturer's instructions.

B. Allow primer to cure a minimum of 2-4 hours at 70°F and 50% RH or until tack free before applying base coat.

3.4 DETAILING

A. Non-Structural Cracks up to 1/16 inch: Apply a detail coat of , Sikalastic 715 Lo-VOC Top with , 4 inches wide, centered over the crack. Allow to become tack free before overcoating.

B. Cracks and Joints over 1/16 inch up to 1 inch: Rout and seal with Sikaflex 2c or 1a sealant and allow to skin over and cure. Apply a detail coat of Sikalastic 710 Lo-VOC Base at 32 mils wet, 4" wide, centered over crack. Allow to become tack free before overcoating. .

C. Fabric Reinforcement: An optional 3" or 6" wide Sikalastic Flexitape Heavy fabric strip may be embedded within the base coat. Flexitape width shall be chosen such that a minimum of 1" tape is embedded on either side of the crack/joint. Apply additional coating as required to fully embed the Flexitape in the coating

3.5 BASE COAT

A. Sikalastic 710 Base:

1. Thoroughly mix Sikalastic 710 Base using a mechanical mixer (Jiffy) at slow speeds until a homogenous mixture and color is obtained. Use care not to allow the entrapment of air into the mixture. Apply at the recommended coverage rate of 32 mils wet, using a 3/16" notched squeegee or trowel and backroll using a phenolic resin core roller. Extend base coat over entire area including previously detailed cracks and control joints. Allow coating to cure a minimum of 16 hours at 70°F and 50% RH or until tack free before top coating.

3.6 INTERMEDIATE COAT

A. Sikadur 22 lo mod epoxy (Broadcast to refusal):

1. For heavy pedestrian traffic applications only, thoroughly mix Sikadur 22 lo mod using a mechanical mixer (Jiffy) at slow speeds until a homogenous mixture and color is obtained.
2. Apply at 20 mils wet, using a 3/16" notched squeegee and backroll using a phenolic resin core roller. Apply aggregate evenly seeded and distributed at 1.25 lbs. per sf into the wet coating making several passes. Cover completely before binder becomes tack free Allow coating to cure a minimum of 8 hours (at 70°F and 50% RH or until tack free between coats.

3.7 TOP COATS

A. Sikalastic 715 Top: (Two Goats}

B. Thoroughly mix Sikalastic 715 using a mechanical mixer (Jiffy) at slow speeds until a homogenous mixture and color is obtained.

C. For heavy pedestrian traffic applications, apply at 13 mils wet, using a notched squeegee and backroll using a phenolic resin core roller.

D. Apply aggregate evenly distributed at the appropriate rate immediately into wet coating and backroll if required.

E. Allow coating to cure a minimum of 16 hours (6 hours with Booster) at 70°F and 50% RH or until tack free between coats.

F. Allow a minimum of 72 hours (36 hours with Booster) before opening to pedestrian traffic.

3.8 FIELD QUALITY CONTROL

A. Contractor:

1. Contractor shall retain the services of the manufacturer's field technician for a minimum of two (2) field inspections as follows:
   a. Completion of preperation of substrate and prior to application of product and start of installation.
   b. Completion of the installation.
2. Manufacturer's shall provide a written report after each inspection to YPS Office of Facilities Management, Architect, and Contractor.

3.9 CLEANING

A. Remove uncured materials from tools or other surfaces with an approved solvent. Remove cured materials by mechanical means.

B. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

3.10 PROTECTION

A. Do not permit traffic over unprotected surfaces.

END OF SECTION

SECTION 07 1900
WATER REPELLENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. Chemical treatment application to reduce water infiltration to exterior, stone and brick surfaces.

1. Provide materials, labor, equipment, and services necessary to furnish, deliver, and install all work of this section as shown on the drawings, as specified herein, and/or as required by job conditions.

1.3 RELATED REQUIREMENTS

A. 04 0100 - Roof Related Masonry Maintenance.

B. Section 04 0110 - General Maintenance of Masonry.

1.4 REFERENCE STANDARDS

A. ASTM D 1653 Method B, Condition A – Test method to determine perm rating.

1.5 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a meeting at least one week prior to starting work; require attendance of affected installers; invite YPS Office of Facilities Management and Fuller and D'Angelo, P.C.

1.6 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide details of tests performed, limitations, chemical composition, and technical data sheets.

C. Manufacturer's Specifications and Installation Instructions: Indicate special procedures and conditions requiring special attention; cautionary procedures required during application.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Submit a detailed plan for proposed application methods for each type of substrate for review and approval by YPS Office of Facilities Management and Fuller and D'Angelo, P.C.

F. Manufacturer's Field Reports: Report whether manufacturer's "best practices" are being followed; if not, state corrective recommendations. Email report to YPS Office of Facilities Management and Fuller and D'Angelo, P.C. the same day as inspection occurs; mail report on manufacturer's letterhead to YPS Office of Facilities Management and Fuller and D'Angelo, P.C. within 2 days after inspection.

G. Manufacturer's Qualification Statement.

H. Installer's Qualification Statement.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than ten (10) yearsdocumented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with at least five (5) years of documented experience and approved by manufacturer.

C. Yonkers Public Schools reserves the right to provide continuous independent inspection of surface preparation and application of water repellent.

D. Provide at least one person who shall be present at all times during the execution of the work of this section, who shall be thoroughly familiar with the specified requirements, and the materials and methods needed for their execution, and who shall direct all work performed under this section.

1.8 MOCK-UP

A. Prepare a representative surface 36 inch by 36 inch in size using specified materials and preparation and application methods on surfaces identical to those to be coated; approved mock-up constitutes standard for workmanship.

B. Locate where directed.

C. Mock-up may remain as part of the Work.

1.9 FIELD CONDITIONS

A. Protect liquid materials from freezing.

B. Do not apply water repellent when ambient temperature is lower than 50 degrees F or higher than 100 degrees F.

C. Do not apply water repellents when wind velocity is higher than 10 mph.

1.10 TEST PANELS

A. Rilem testing shall take place on the test panels to determine efficacy and coverage rates as well as warranty information. Manufacturer or an authorized distributor will oversee Rilem testing. Contact manufacturer prior to project for information on possible testing fees.

1. Projects requiring the 10 year warranty are required to submit the following information prior to the application of product:
    a. Rilem testing before
    b. Rilem testing after
    c. Purchase order/Invoices for order
    d. Contractor/Applicator Information
    e. Specifier Information
    f. Building Owner Information

B. The Contractor shall arrange for preparing test panels to determine the coverage rates of each substrate. Size of testing area shall be no smaller than 1’ SF.

C. Contractor shall prepare a written report detailing results of testing including description of application methods employed.

D. Each test panel must be carefully labeled, charted, and photographed. Approved test panels will become a part of the Work, and serve as the quality standard for similar type work on this project.

E. Notify the YPS Office of Facilities Managementseven (7) days in advance of the dates and time when the test panels will be installed

1.11 PROJECT/SITE CONDITIONS

A. Contractor shall be responsible for repairing damaged masonry prior to application of water repellent.

B. Repairs shall be made by qualified mechanics skilled in the type of repairs required, to the satisfaction of the owner’s representative.

C. Cover air intakes, air conditioning vents and similar openings that may come in contact with the water repellent and residues fumes. Leave covers in place until application of water repellent is completed in the area.

D. Protect trees, plants, foliage, storm sewers, and surrounding surfaces from water repellent.

E. Take appropriate precautions to avoid harm to building occupants, pedestrians and nearby property. Terminate work when wind drift may cause contact with passerby or vehicles and adjacent property

1.12 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a ten (10). year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Water Repellents:

1. R97 water repellent as manufacrured by Cathedral Stone Products; contact Technical Reps - Tel: 410-782-9150; fax: 410-782-9155

2.2 MATERIALS

A. Water repellent shall be environmentally safe, 50 state VOC compliant, free of flammable solvents and fumes, caustics and MUST NOT contain Silanes, Siloxanes or derivatives of Silanes and or Siloxanes. Products must be compatible with all porous masonry substrates including repair and replacement materials.

1. Testing requirements:
   a. Water repellent must not contain or produce any VOC’s
   b. Minimum rating of 80 perms when applied to manufactures specification.
   c. Water Repellant must not lower the water vapor transmission (WVT) of the substrate by more than 1/3 of its pretreated value

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify joint sealants are installed and cured.

C. Verify surfaces to be coated are dry, clean, and free of efflorescence, oil, or other matter detrimental to application of water repellent.

D. Repair materials must be fully cured prior to applying water repellant.

3.2 PREPARATION

A. Protection of Adjacent Work:

1. Protect adjacent landscaping, property, and vehicles from drips and overspray.
2. Protect adjacent surfaces not intended to receive water repellent.

B. Prepare surfaces to be coated as recommended by water repellent manufacturer for best results.

C. Remove loose particles and foreign matter.

D. Remove oil and foreign substances with a chemical solvent that will not affect water repellent.

E. Allow surfaces to dry completely to degree recommended by water repellent manufacturer before starting coating work.

F. Do not work when precipitation is expected within 24 hours of installation.

3.3 APPLICATION

A. Apply water repellent in accordance with manufacturer's instructions, using procedures and application methods recommended as producing the best results.

B. Clearly mark or identify areas that have been treated at the end of each shift.

1. Apply sealer in a systematic pattern to ensure complete.
2. Apply wet on wet.

C. Spray application shall be from bottom up, creating 4-8" rundown below spray contact point

1. Let dwell 5 to 10 minutes for penetration and re saturate.

D. Brush application shall be from bottom up, saturating uniformly.

1. Let dwell 5 to 10 minutes for penetration and re saturate. Brush out heavy runs and drips.

E. Apply at rate recommended by manufacturer, continuously over entire surface.

F. Remove water repellent from unintended surfaces immediately by a method instructed by water repellent manufacturer.

G. Provide manufacturer's field service representative to inspect preparation and application work continuously during entire application period to ensure that manufacturer's "best practices" for preparation and application are being followed.

3.4 CLEAN UP

A. During the work, remove from the site discarded cleaning and coating materials, rubbish, cans and rags at the end of each workday.

B. B. Upon completion of work, remove all protective coverings and coatings, and clean window glass and other spattered surfaces. Remove spattered coatings by proper methods as recommended by manufacturer, using care not to damage adjacent surfaces

END OF SECTION

SECTION 07 5323
EPDM ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. All plant, labor, materials, equipment, testing and services necessary to complete the work shown on the drawings, schedules, and keynotes, as specified, and as may be required by conditions and authorities having jurisdiction, including, but not limited to, the following:

1. Inspect the underside of the roof deck before starting work, and periodically each day as work occurs, to determine if there are conduits, pipes, ceiling hangers or fixtures next to the deck or fastened to the deck that could be affected as roof work occurs.

    a. Perform roof work so any conduits, pipes, ceiling hangers or fixtures are not disturbed.

    b. Replace and reset any conduits, pipes, ceiling hangers or fixtures that are affected by the work.

2. Remove and dispose of existing gravel surfacing, roofing, insulation, the vapor barrier, underlayment, wood blocking, and flashing.

    a. Clean all residual material from the surface of the decks, and from within the flutes of the steel decks.

    b. The work may include removing asbestos containing roofing materials. Refer to the asbestos abatement specification for additional information and asbestos removal requirements.

3. Install a new fully adhered unreinforced 60 mil thick EPDM roofing system, including a vapor barrier on concrete deck areas, insulation, cover board, flashing, stripping and related accessories.

4. Provide miscellaneous mechanical, electrical, hoisting and other work needed, and remove, adjust, modify, reset and reconnect all roof-mounted and roof-penetrating equipment.

5. Install new flashings at the roof drains, and all roof-mounted and roof-penetrating equipment.

6. Disconnect and remove abandoned mechanical equipment and curbs, and infill the roof deck.

7. Refasten loose sections of the roof decks as Base Bid work.

8. Repair deterioration less than 1/2 inch deep in the surface of the existing concrete, gypsum, and structural wood fiber plank deck as Base Bid work.

9. Replace deteriorated portions of existing deck in accordance with the Unit Prices.

10. Perform repairs on existing EPDM roofs where indicated on the drawings

11. Protect roof surfaces where material and equipment are placed on them, and where construction traffic occurs, with 6 mil fire retardant polyethylene covered with 1-1/2 inch thick foam insulation, overlaid with 2 by 10 wooden planks.

B. Related Requirements

1.	Masonry Maintenance	- Section 04 0100
2.	Carpentry	- Section 06 1000
3.	Sheet Metal Flashing & Specialties	- Section 07 6200
4.	Roof Accessories	- Section 07 7200

1.3 CODE APPROVAL REQUIREMENTS

A. Install roofing and insulation system components to meet the following minimum requirements:

1. New York State Uniform Fire Prevention and Building Code, which includes by reference the New York State Energy Conservation Code.

2. Underwriters Laboratories Inc. Class A External Fire Rating for roof assemblies tested in accordance with ASTM E 108 or UL 790.

3. Underwriters Laboratories Inc. Standard 1256 for roof assemblies with foam insulation.

4. Minimum wind uplift pressure calculated using ASCE 7 and a safety factor of 2:
   a. Field Zone - 60 psf
   b. Perimeter Zones - 100 psf
   c. Corner Zone - 150 psf

B. Provide written certification from the roof material Manufacturer, before beginning work, to confirm the roofing system meets these requirements.

1.4 QUALITY ASSURANCE

A. Installer Qualifications:

1. A firm (Installer) with at least 5 continuous years experience performing work similar to that required for this project, employing personnel skilled in the work specified.

   a. The Installer shall directly employ the personnel performing the work of this section.

   b. The Installer shall have a supervisor on the roof when work is in progress. The Supervisor shall have a minimum of 5 years experience with work similar in nature and scope to this project, and speak fluent English.

      1. Submit the supervisor’s resume upon request.

2. The Installer shall provide a reference list of at least three previously completed projects of comparable size and similar design within fifty miles of this project, which may be observed by representatives of the Owner:

   a. The reference list shall include at a minimum, the completion date, a description of the work performed, the Owner’s name - contact person - phone number and address and the Architect’s name - contact person and phone number.

   b. Submit the reference list upon request.

3. The Installer shall be acceptable to or licensed by the Manufacturer of the primary roofing materials, and provide written certification from the Manufacturer to confirm this prior to award if requested.

B. Material Quality: Obtain each type of material from a single source to ensure consistent quality, color, pattern, and texture.

1.5 PRE-CONSTRUCTION CONFERENCE

A. Meet at the project site between one and two weeks prior to starting work, with the Architect, Owner and other representatives concerned about the work, to discuss the following:

1. How the building will be kept watertight as old roofing is removed and the work progresses.

2. How new roofing will be coordinated with the installation of the vapor barrier, insulation, cover board, flashings and other items to provide a watertight installation.

3. Generally accepted industry practice and the Manufacturer's instructions for handling and installing his products.

4. The condition of the substrate (deck), curbs, penetrations and other preparatory work needed.

5. Incomplete submittals; note that progress payments will be not processed until all submittals are received and approved.

6. The construction schedule, weather forecast, availability of materials, personnel, equipment and facilities needed to proceed and complete the work on schedule.

7. A schedule for Manufacturer and Architect inspections.

1.6 SUBMITTALS

A. Submit the following items far enough in advance to obtain approval prior to performing any work on site:

1. A pre-work site and building inspection report with photos to document conditions before work starts.

2. Written certification from the Manufacturer which states that the Installer is acceptable or licensed to install the specified roofing; if not previously provided.

3. Manufacturer's technical literature for all materials.

4. Samples of the Contractor’s Guarantee and Manufacturer’s warranty forms.

5. Test reports and certifications substantiating compliance with specification requirements if requested by the Architect.

B. Simultaneously provide all technical submittals needed for this project, for all technical sections, collated by section. Incomplete submittals will not be reviewed.

1. Submittals shall be prepared and made by the firm that will perform the actual work.

2. Provide electronic submittals via an on-line submittal exchange program if one is established for this project; if an on-line program isn't established, provide the submittals on portable USB drives in pdf format, organized in folders by Section.

C. Safety Data Sheets: Simultaneously provide all Safety Data Sheets needed for this project, for all specification sections - collated by section, in three ring binders. Provide two binders for each building.

D. Payment requisitions will not be processed until all submittals are received and approved.

1.7 JOB CONDITIONS (CAUTIONS & WARNINGS)

A. Do not use oil or solvent based roof cement with EPDM roofing. Do not allow waste products, (petroleum grease or oil, solvents, vegetable or mineral oil, animal fat) or direct steam venting to come in contact with any roofing, insulation or flashing product. Do not expose EPDM roofing and accessories to a temperature in excess of 175 degrees Fahrenheit.

B. Splice cleaner, primer, cements and bonding adhesives are flammable. Do not breathe vapors or use near fire or flame or in a confined or unventilated area. Dispense only from a UL listed safety can or the Manufacturer’s original container.

C. Remove empty adhesive, cleaner and solvent containers and contaminated rags from the roof and legally dispose of them daily.

D. Do not apply primer, cleaners or adhesives next to ventilation system louvers or windows. Temporarily cover the louvers and windows with 6 mil fire retardant polyethylene and prevent odors from entering the building. Remove temporary covers at the end of each days work.

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver material to the site in the Manufacturer's original and unopened packaging, with intact and legible labels which identify the products and Manufacturers,

B. Cover all stored materials, except rolls of EPDM and sealed cans of adhesives, with watertight tarpaulins installed immediately upon delivery.

C. Immediately remove insulation which gets wet from the job site.

D. Store and install all material within the Manufacturer’s recommended temperature range.

E. Do not overload the structure when storing materials on the roof.

F. Protect roof surfaces where material and equipment are placed on them, and where construction traffic occurs, with 6 mil fire retardant polyethylene, covered with 1-1/2 inch thick foam insulation, overlaid with 2 by 10 wooden planks.

1.9 GUARANTEE AND WARRANTY

A. Provide a written Manufacturer's Full System Warranty which warrants that the roofing system, including the insulation, cover board, EPDM roofing and flashings, will remain in a watertight condition for a twenty year period beginning upon Final Completion.

1. Guarantee coverage shall remain in effect for gust wind speeds up to 72 miles per hour, measured at ground level at the site.

2. Guarantee coverage shall have no dollar value limit.

B. Provide a written Contractor's Guarantee which guaranties that all work will remain free of material and workmanship defects and in a watertight condition for five years beginning upon Final Completion:

1. Defects include but are not limited to the following: leakage, adhesive separation, delamination, lifting, loosening, splitting, cracking, joint separation, movement and undue expansion or shrinkage.

2. The Contractor shall make the repairs and modifications necessary to enable the work to perform as guaranteed at his own expense:

3. Guarantee coverage shall include removing and replacing materials installed as part of the original work, if removal is needed to affect guaranteed repairs.

4. Guarantee coverage shall remain in effect for gust wind speeds up to 72 miles per hour, measured at ground level at the site.

5. Guarantee coverage shall have no dollar value limit.

C. Provide one Contractor's Guarantee that covers "all work performed" when a single contractor is awarded work specified in multiple Sections.

D. The Manufacturer's Warranty and Contractors Guarantee shall take effect no more than 30 days before the completion of all punch list work.

E. The Contractor's Surety Company may add a rider to the Performance Bond which clarifies that Performance Bond Coverage expires two years after Final Completion; i.e., Performance Bond Coverage does not run for the entire five year term of the Contractor's Guarantee.

F. Guarantee and Warranty coverage may be cancelled, for the affected portion of the roof, if the work is damaged by winds in excess of 72 mph, by hail, lightning, insects or animals, by failure of the structural substrate, by exposure to harmful chemicals, by other trades on the roof, or by vandalism, or if the Owner fails to maintain the roof in accordance with, or makes roof alterations contrary to, the Manufacturer's printed recommendations.

1. Guarantee and Warranty coverage shall be reinstated, for the remainder of the original period; if the Owner restores the roof to the condition it was in prior to the damage occurring.

1.10 SUBSTITUTIONS

A. The following factors will be considered when evaluating a possible alternative to the roofing system specified:

1. The wording and intent of the warranty to be issued.

2. The financial status, numbers of years in business, and stability of the entity that will issue the warranty.

3. A reference list of at least five completed similar projects of comparable size, with a successful functional history of at least five years, within approximately fifty miles of the Project.

4. Technical aspects of the system, especially relating to durability, serviceability and performance.

5. The Manufacturer's ability and history providing technical support, on-site inspections and in progress assistance.

6. The availability and experience of local authorized applicators to install and maintain the proposed alternate system.

7. The Manufacturer's willingness and history responding to warranty claims previously made by the Owner, Architect or Consultant's involved in this project.

PART 2 - PRODUCTS

2.1 GENERAL

A. EPDM roof system components are specified as products of Firestone Building Products Company to establish a standard of quality. Equal products and systems from Carlisle SynTec and Johns Manville will be accepted.

B. Primary products required for this project include:

1. Vapor barrier
2. Roof insulation
3. Cover board
4. EPDM roofing
5. Primers and adhesives
6. Sealants
7. EPDM flashing
8. Fasteners
9. Acrylic coating

2.2 EPDM

1. Unreinforced 60 mils thick, fire retardant, EPDM (Ethylene Propylene Diene Monomer) sheet membrane conforming to the following minimum physical properties.

PROPERTY	TEST METHOD	SPECIFICATION
Color	—	Gray/Black
Tensile Strength	ASTM D-412	1305 psi min.
Elongation	ASTM D-412	300% min
Tear Strength	ASTM D-624	150 lb/in min
Ozone Resistance	ASTM D-1149	No cracks, 7 days/100 pphm/100ºF/50% strain
Heat Aging	ASTM D-573	1200 psi min@ 200% elongation/4 wks/240ºF
Brittleness Temperature	ASTM D-746	-49ºF
Water Vapor Permanence	ASTM E-96	2.0 perm max
Thickness	ASTM D-412	60 mils plus/minus 6 mils
Fire Retardant		UL Class A

2. Utilize EPDM with factory applied adhesive for “peel and stick” application on occupied buildings and where the odor of Bonding Adhesive may affect occupants.

2.3 RELATED MATERIALS

A. Cleaners, adhesives, sealants, caulking and fasteners furnished by the EPDM system Manufacturer, that comply with low VOC regulations in effect at the time of application.

1. Stripping: 90 mil thick 5 inch and 9 inch wide self adhering flashing, consisting of 45 mils of semi-cured EPDM factory laminated to 45 mils of cured seaming tape.

2. Bonding Adhesive: High strength contact adhesive.

3. Splice Adhesive: High strength synthetic polymer based contact cement formulated specifically to splice EPDM sheets.

4. Lap Sealant: EPDM rubber based gun grade sealant.

5. Water Block Seal: One component low viscosity butyl rubber sealant.

6. Pre-Molded Pipe Flashing: Pressure sensitive prefabricated flashings with pre-applied adhesive.

7. Pourable Sealer: Two component, solvent free polyurethane based sealant.

8. Reinforced Perimeter Fastening Strips: .030 inch thick reinforced cured EPDM.

9. Seam Tape Primer: Synthetic rubber polymer based primer designed to clean and prime seam tape spice areas prior to installing the tape.

10. Seam Splice Tape: Nominal 30 mil thick cured polymer self adhesive tape with release paper carrier, 6 inches wide.

11. Plates and Bars: Galvanized and corrosion resistant specialty products.

12. Fasteners: #14 Fluorocarbon polymer coated heavy duty screws.

B. Primer & Vapor Barrier:

1. Primer: Thin, cut back asphalt meeting ASTM D41.

2. Vapor Barrier: Fire resistant torch grade SBS modified granular surfaced polyester and glass scrim reinforced cap sheet meeting ASTM D 6163 Type I, Grade G, furnished by the same manufacturer as the EPDM.

C. Gypsum Cover Board: 1/4 and 1/2 inch thick fire resistant gypsum board decking with inorganic glass mat facers and a water resistant core, formulated in 48 x 48 inch square edge boards, UL Class A, meeting ASTM C-1177, manufactured under the trade name Dens-Deck Prime.

D. Insulation: Flat and tapered rigid cellular polyisocyanurate boards with fibrous felt/fiberglass mat facers, minimum compressive strength 20 psi, meeting ASTM C1289-01, Type II, Class1, Grade 2, as manufactured by Firestone under the trade name of “ISO 95+ Isocyanurate Insulation”. Minimum thickness as shown on the drawings.

1. Tapered insulation sloping 1/8 and 1/4 inch per foot as shown on the drawings.
2. Crickets sloping 1/4 inch per foot.

E. Tapered edge strips – high density isocyanurate or wood fiberboard strips installed at the drain sumps, and insulation transition points.

F. Insulation adhesive: Two component low rise polyurethane foam adhesive, installed with a mixing extruding Pace Cart dispenser, or with a pleural heated foam rig, Firestone I.S.O. Adhesive.

1. Use insulation adhesive suitable for application at the intended application temperatures.
2. Do not use twin cartridge “caulking gun” adhesive except on very small isolated sections of roof.

G. Concrete Grout: Fast setting Portland cement based polymer modified repair mortar as manufactured by The Quikrete Companies, under the trade name Quick-Setting Cement, or equal.

H. Gypsum Plaster: Fast setting gypsum base coat plaster, manufactured by Georgia Pacific under the trade name Structo-Lite.

PART 3 - EXECUTION

3.1 GENERAL

A. Install the new roofing system in a watertight, workmanlike manner, meeting the guarantee requirements specified herein; in accordance with the drawings and in conformance with the Manufacturer's requirements, except as enhanced by the drawings and specifications.

B. Perform work next to roof mounted mechanical equipment, so the work coincides with equipment shutdown periods and does not affect building occupants. Temporarily cover and protect equipment openings, and windows next to the work area, with 6 mil fire retardant polyethylene, so dirt, dust and odors do not enter the equipment or building. Remove covers as soon as the work is complete and at the end of each workday.

C. Clean substrate surfaces of all laitance, dirt, oil, grease or other foreign matter.

D. Remove debris daily and as it is generated. Do not stock-pile debris on the roof. Do not leave any debris on the roof at the end of the day. Do not overload the roof structure when moving debris.

E. Install roof system components on dry surfaces only. Do not install any components when the weather and outside temperatures are not suitable in accordance with the Manufacturer's recommendations.

F. Complete all work including the equipment flashings, in sequence as quickly as possible so the smallest area possible is under construction at any one time. Complete the entire area of work begun each day, the same day, and make all exposed edges watertight at the end of each day's work.

G. Protect roof surfaces where material and equipment are placed on them, and where construction traffic occurs, with 6 mil fire retardant polyethylene, covered with 1-1/2 inch thick foam insulation, overlaid with 2 by 10 wooden planks.

3.2 SUBSTRATE INSPECTION

A. Remove existing roofing, insulation, flashings, underlayment material, and the vapor barrier as indicated, and carefully check the existing deck. To be an acceptable surface for the new roofing system, it is to be well secured to the underlying structure and not rotted or otherwise deteriorated.

B. Immediately notify the Architect and Owner by telephone and in writing if defects in the substrate are discovered.

C. Maintain the building watertight in the interim, but do not install new roof system components until defects have been corrected.

3.3 DECK REPAIR

A. Gypsum deck repairs:

1. Remove damaged and deteriorated gypsum decking and form board, from bulb T to bulb T, in locations where portions are missing or damaged beyond surface repairs or patching.

2. Retain about 6 inches of existing wire mesh reinforcement at the perimeter of the removal area.

3. Install new form board, which matches the type and thickness of the existing form board, and with the underside painted to match the surrounding pieces of form board if exposed to view. Install new metal reinforcement mesh, and connect the ends of the new reinforcement to the ends of the reinforcement in the adjoining decking.

4. Install (pour) new gypsum decking to match the type, thickness and slope of existing decking.

B. Steel deck repairs:

1. Remove damaged and deteriorated decking across the entire width of individual sections by a length equal to a minimum of two joist bays.

2. Install new deck to match the thickness, gauge and cross section of the existing deck. New steel deck shall be galvanized.

3. Fasten new decking to each joist with #10 screws spaced 6 inches on center.

4. Stitch side seams of steel deck with #10 screws spaced 24 inches apart.

C. Structural wood fiber (SWF) plank deck repairs:

1. Remove damaged or deteriorated SWF planks in their entirety.

2. Install new SWF planks to match the original thickness and size, and secure each new plank with galvanized clips at each joist.

3. Fill spaces between planks with quick setting non shrink cement grout.

D. Concrete deck repairs:

1. Perform repairs to the surface of concrete deck areas, 1/2 inch or less in depth, with quick setting non-shrink grout under the Base Bid.

2. Deterioration greater than 1/2 inch deep shall be brought to the Architects attention for his review and direction.

3.4 VAPOR BARRIER CONCRETE DECKS

A. Install primer and a vapor barrier on the concrete decks: install the primer and allow it to dry.

B. Starting at the low point, torch apply and fully adhere modified bitumen vapor barrier sheets to the primed substrate. Lap sheets at least 4 inches at the ply overlaps and at least 6 inches at the end laps.

C. Carefully install the vapor barrier sheets to achieve only the minimum required bleed out.

D. Extend vapor barrier up vertical surfaces at the roof perimeter, and up and around all penetrations and curbs, and seal the vapor barrier to provide continuity of the building air/vapor envelope.

3.5 INSULATION AND COVER BOARD

A. Install tapered insulation neatly cut at all miters and transitions. Do not lace corner boards.

B. Install insulation with joints offset between rows and layers a minimum of 12 inches. Cut insulation to fit neatly at penetrations and joints. Fill any gap which is greater than 1/4 inch.

C. Fasten the all layers of insulation only to the top flute of steel decks, with screws and discs which penetrate through the deck a minimum of 3/4 inch and a maximum of 1-1/2 inches.

1. Install 16 fasteners per 4 by 8 foot insulation board in the field of the roof.
2. Install 28 fasteners per 4 by 8 foot insulation board in 8 foot wide perimeter zones.
3. Install 32 fasteners per 4 by 8 foot insulation board in 8 foot square corner zones.

4. Carefully choose the length and position of each screw to ensure the screws do not protrude through the underside of the deck where visible inside the school, and to ensure the screws do not damage conduits mounted on the underside of the deck.

D. On concrete, gypsum and structural wood fiber deck areas install all layers of insulation using low rise polyurethane foam adhesive applied in accordance with the Manufacturer's recommendations and to achieve the specified minimum uplift resistance. Offset joints in the insulation between rows and layers a minimum of 12 inches. Cut insulation to fit neatly at penetrations and joints. Fill any gap which is greater than 1/4 inch.

1. Install 1/2 inch diameter adhesive beads 12 inches on center in the field of the roof.
2. Install 1/2 inch diameter adhesive beads 6 inches on center in 8 foot wide perimeter zones.
3. Install 1/2 inch diameter adhesive beads 4 inches on center in 8 foot square corner zones.
4. Place 5 gallon pails half full of gravel or concrete on the insulation and gypsum cover boards to hold them firmly in position for at least 15 minutes while the low rise foam adhesive sets. Position the pails no more than 24 inches apart in all directions.

E. Install gypsum cover board using low rise polyurethane foam adhesive applied in accordance with the Manufacturer's recommendations and to achieve the specified minimum uplift resistance, over the insulation with joints offset between rows and layers a minimum of 12 inches. Cut gypsum cover board to fit neatly at penetrations and joints. Fill any gap which is greater than 1/4 inch.

1. Install 1/2 inch diameter adhesive beads 12 inches on center in the field of the roof.
2. Install 1/2 inch diameter adhesive beads 6 inches on center in 8 foot wide perimeter zones.
3. Install 1/2 inch diameter adhesive beads 4 inches on center in 8 foot square corner zones.
4. Place 5 gallon pails half full of gravel or concrete on the insulation and gypsum cover boards to hold them firmly in position for at least 15 minutes while the low rise foam adhesive sets. Position the pails no more than 24 inches apart in all directions.

F. Insulation and gypsum cover board installed without using pails of concrete or gravel ballast shall be removed and replaced.

3.6 EPDM

A. Place EPDM roofing on the substrate without stretching it, and allow it to relax approximately one hour – before starting to adhere it to the substrate and form the seams.

B. Place adjoining sheets in the same manner lapping the edges to shed water.

C. Fully adhere EPDM to the substrate with bonding adhesive; or use EPDM with factory applied adhesive.

1. Open each can of adhesive and stir it with an electric paddle mixer for at least 5 minutes before applying the adhesive. Re-stir adhesive that isn't used within two hours of initial mixing.

2. Do not punch holes in cans of adhesive and use them in a "Better Spreader" without first opening the cans to mix them.

3. Replace used roller covers each day; discard covers after each days use.

4. Allow bonding adhesive to dry to the touch before joining the EPDM to the substrate.

5. Roll the EPDM onto the dried bonding adhesive and immediately rub it vigorously with a soft bristle broom to ensure complete adhesion.

D. EPDM installed over improperly applied adhesive or with adhesive that wasn't stirred, and roofing installed with blisters, ridges, mole runs and similar deficiencies shall be removed and replaced. Removal shall include the insulation and cover board assembly.

3.7 SPLICING

A. Form EPDM roof splices with 6 inch wide field applied seam tape, or with 3 inch wide factory applied seam tape.

1. Fold the top sheet back and clean mating surfaces using clean rags with splice wash.

2. Scrub a smooth coat of QuickPrime onto mating surfaces, with long strokes, and to obtain complete coverage, using approximately 1 gallon per 225 square feet. Do not allow the QuickPrime to glop, streak or puddle; allow it to dry to the touch before installing the seam tape.

3. Seam tape shall be positioned so 1/8 inch minimum and 1/2 inch maximum will be exposed at the seam edge when the seam is complete.

   a. Install 5 inch uncured EPDM stripping over any seam where the tape is exposed less than 1/8 inch or more than 1/2 inch.

4. Roll and allow the top sheet to fall freely into place without stretching or wrinkling it.

5. Pull splice tape release paper from within the seam and neatly mate the seam using hand pressure to rub the membrane together.

6. Immediately roll the splice with a 2 inch wide roller, using positive pressure, toward the outer edge of splice.

B. Install uncured EPDM target patches with rounded corners, over all T-Seam intersections.

3.8 PERIMETER FASTENING

A. Secure the EPDM at the perimeter of each roof level, and at eaves, penetrations, expansion joints and slope changes greater than 1 inch in 12 inches. Utilize surface applied discs or adhere the EPDM to continuous reinforced EPDM fastening strips. Secure the discs and EPDM fastening strips 12 inches on center.

3.9 FLASHINGS

A. Utilized cured EPDM for all flashings; utilize self-curing EPDM at corners and angle changes only where required by the Manufacturer.

1. Form flashing splices, and the splice between the flashing and main roof sheet with 6 inch seam tape.

2. Adhere the flashing to vertical surfaces with bonding adhesive.

3. Fasten the top edge of all flashings, positioning the fasteners 12 inches on center, to be covered by a cap flashing.

B. Install premolded pipe flashings wherever possible. Where premolded pipe flashings cannot be installed, use field wrapped flashings. Install sealant pockets as a last resort.

C. Remove existing pipe flashings and Kennedy type couplings and extend the vent pipes to finish a minimum of 18 inches above the roof surface.

1. Extend the pipes using the same type of pipe material as the original vent pipe.

2. Use threaded or no-hub couplings, positioned within the insulation layer to extend the pipes.

3.10 MISCELLANEOUS

A. Provide any miscellaneous roofing, flashing, caulking, and metal work needed to leave the work complete and entirely watertight, neatly and carefully executed in a thorough and workmanlike manner.

B. Use mechanics skilled and licensed in the trades to perform mechanical and electrical work. Provide new material, couplings, transition pieces, blocking, fasteners and the like needed to complete the work.

3.11 CLEANING, PROTECTION AND WATERTIGHTNESS

A. Inspect the interior and exterior of the building and grounds, and submit a written report with photos to document any pre-existing leakage or damage, prior to performing any work.

B. The Owner will conduct a similar inspection at the completion of the work, and the Contractor will be charged for all leaks and damage that weren't documented in the Contractor's report, or repaired to the Owners satisfaction at the Contractor's expense.

C. Provide any equipment, material and labor necessary to protect the site, the building, its contents and occupants, pedestrians, and surrounding landscaped and paved areas from damage due to the construction work or from inclement weather during construction.

D. Do not perform work during inclement weather. Protect incomplete work and the building from damage by inclement weather - which may occur unexpectedly. Make all work areas watertight at the end of each day's work.

E. Clean up all litter, refuse, rubbish, scrap materials and debris at least twice a day; at noon and at the end of the work day, so the roof and site are neat, orderly and workmanlike. Place the debris in a dumpster, and remove the dumpster from the site as soon as it is full or no longer being used.

F. Carefully and thoroughly clean the entire roof to remove all residual debris when all work is complete. After cleaning the roof, thoroughly clean all drain sumps, drain lines, leader heads and leaders. Do not allow debris to enter the drainage system.

3.12 ROOF INSPECTIONS BY MANUFACTURER

A. Arrange for the roofing Manufacturer, or his authorized representative, to make a minimum of five inspections at each school in accordance with the following schedule and submit a written report of each inspection to the Architect.

1. First inspection during the first two days of new roof installation.
2. Second inspection when roofing is approximately one third complete.
3. Third inspection when roofing is approximately two thirds complete.
4. Fourth inspection when all roofing and flashings are installed.
5. Final inspection at the completion of all work.

B. Provide 48 hours advance written notice to the Architect, so he may have a representative attend the inspections.

C. Submit the inspection reports within one week following each inspection.

1. Payment requisitions will not be reviewed nor approved until the inspection reports are received.

END OF SECTION

SECTION 07 6200
SHEET METAL FLASHINGS & SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. All plant, labor, materials, equipment, testing and services necessary to complete the work shown on the drawings, schedules and keynotes, as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but not limited to:

1. Sheet metal work that is compatible with the roofing systems specified, including cap flashings, hook strips, fascia, drip edges, factory fabricated roof edge systems, copings, gutters, leaders, soffit panels, and miscellaneous flashings.

B. Related Requirements

1.	Masonry Maintenance	- Section 04 0100
2.	Carpentry	- Section 06 1000
3.	EPDM Roofing	- Section 07 5323
4.	Roof Accessories	- Section 07 7200

1.3 CODE APPROVAL REQUIREMENTS

A. Fabricate and install roof perimeter flashings that comply with the NY State Uniform Fire Prevention and Building Code and with ANSI/SPRI ES-1 “Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems” requirements.

1.4 QUALITY ASSURANCE

A. Installer Qualifications:

1. A firm (Installer) with at least 5 continuous years experience performing work similar to that required for this project, employing personnel skilled in the work specified.

   a. The Installer shall directly employ the personnel performing the work of this section.

   b. The Installer shall have a full time supervisor on the roof when work is in progress. The Supervisor shall have a minimum of 5 years experience with work similar in nature and scope to this project, and speak fluent English.

      1. Submit the supervisor’s resume upon request.

2. The Installer shall provide a reference list of at least three previously completed projects of comparable size and similar design, within fifty miles of this project, which may be observed by representatives of the Owner:

   a. The reference list shall include at a minimum, the completion date, a description of the work performed, the Owner’s name - contact person - phone number and address and the Architect’s name - contact person and phone number.

b. Submit the reference list upon request.

B. Material Quality:

1. Obtain each product from a single Manufacturer which has manufactured the same product in the United States of America for not less than 5 continuous years.

2. Obtain copper and pre-finished sheet metal items from the same mill run to maintain consistent color hue and surface finish.

C. Pre-Construction Conference: Meet at the project site between one and two weeks prior to starting work, with the Architect, Owner and other representatives concerned about the work, to discuss the following:

1. How the building will be kept watertight as work progresses.

2. How sheet metal work will be coordinated with the installation of the vapor barrier, thermal barrier, insulation, cover board, roofing, flashings, roof accessories and other items to provide a watertight installation.

3. Generally accepted industry practice and the Manufacturer's instructions for handling and installing his products.

4. The condition of the substrate, curbs, penetrations and other preparatory work needed.

5. Incomplete submittals; note that progress payments will not be processed until all submittals are received and approved.

6. The construction schedule, weather forecast, availability of materials, personnel, equipment and facilities needed to proceed and complete the work on schedule.

7. A schedule for Manufacturer and Architect inspections.

1.5 SUBMITTALS

A. Submit the following items far enough in advance to obtain approval prior to performing any work on site:

1. A pre-work site and building inspection report with photos to document conditions before work starts.

2. Manufacturer's technical literature for all materials.

3. Test reports and certifications substantiating compliance with specification requirements if requested by the Architect.

4. Shop drawings, or 2 foot long samples, for each sheet metal item, to show how it relates and fits on adjoining masonry and wood blocking assemblies, and with the roof, stripping, and flashings.

5. 6 inch square pieces of each type of sheet metal to show surface finish, texture and color.

6. A sample of the Contractor’s guarantee form.

B. Simultaneously provide all technical submittals needed for this project, for all technical sections, collated by section. Incomplete submittals will not be reviewed.

1. Submittals shall be prepared and made by the firm that will perform the actual work.

2. Provide electronic submittals via an on-line submittal exchange program if one is established for this project; if an on-line program isn't established, provide the submittals on portable USB drives in pdf format, organized in folders by Section.

C. Safety Data Sheets: Simultaneously provide all Safety Data Sheets needed for this project, for all specification sections - collated by section, in three ring binders. Provide two binders for each building.

D. Payment requisitions will not be processed until all submittals are received and approved.

1.6 JOB MOCK-UPS

A. After the submittals are approved, prepare in actual job locations, mock-ups of cap flashings, hook strips, drip edges, fascia, factory fabricated roof edge systems, copings, gutters, leaders, soffit panels, and all other items of sheet metal and related work, for inspection and approval by the Architect.

B. Construct each mock-up of two full lengths of metal, fastened, connected and stripped-in to the related roofing system, to show the following:

1. Type, gauge, color, cross-sectional dimensions and shape, and joint and mitering techniques.

2. Related masonry work, wood blocking, and the attachment techniques and fasteners for all wood and metal components.

3. Other sheet metal related materials and their installation techniques to fully define the detailing of each mock-up.

C. Mock-ups shall be constructed to establish the minimum standard of materials and workmanship, and to assure that completed work which matches the mock-ups will be fully functional and serve the purpose for it has been designed.

D. Approved mock-ups may be left in place and incorporated into the permanent installation. Rejected mock-ups shall be removed and replaced until an acceptable mock-up is approved.

E. Do not purchase or fabricate sheet metal items until mock-up installation, inspection and approval are completed and approval is documented in writing.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver material to the site in the Manufacturer's original and unopened packaging, with intact and legible labels which identify the products and Manufacturers,

B. Cover all stored materials with watertight tarpaulins installed immediately upon delivery.

C. Do not overload the structure when storing materials on the roof.

D. Protect roof surfaces where material and equipment are placed on them, and where construction traffic occurs, with 6 mil fire retardant polyethylene, covered with 1-1/2 inch thick foam insulation, overlaid with 2 by 10 wooden planks.

1.8 GUARANTEE

A. Provide a written Contractor's Guarantee which guarantees that all work will remain free of material and workmanship defects and in a watertight condition for five years beginning upon Final Completion:

1. Defects include but are not limited to the following: peeling paint, leakage, adhesive separation, delamination, lifting, loosening, splitting, cracking, and undue expansion.

2. The Contractor shall make the repairs and modifications necessary to enable the work to perform as warranted at his own expense.

3. Guarantee coverage shall include removing and replacing materials installed as part of the original work, if removal is needed to affect guaranteed repairs.

4. Guarantee coverage shall have no dollar limit.

B. Provide one Contractor's Guarantee that covers "all work performed" when a single contractor is awarded work specified in multiple Sections.

C. The Guarantee coverage shall take affect no more than 30 days before the completion of all punch list work.

D. The Contractor's Surety Company may add a rider to the Performance Bond which clarifies that Bond Coverage expires two years after Final Completion; i.e., Performance Bond Coverage does not run for the entire five year term of the Contractor's Guarantee.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Copper sheet: ASTM B370, 99.0 % pure copper, thickness 16 ounces per square foot. Use copper for all metal items not otherwise indicated

B. Zinc-Tin coated copper: copper sheet, coated on both sides, with a smooth uniform coating of zinc and tin, base metal weight 16 ounces per square foot, cold rolled temper, available as FreedomGray Copper by Revere.

C. Solder:
1. 50-50 tin and lead for plain copper, supplied in one pound bars with the alloy mixture stamped into the bar by the Manufacturer.
2. Lead free / or pure tin solder for zinc-tin coated copper, Number 497 by Johnson Manufacturing.

D. Flux:
1. Water-Soluble Liquid Flux, Kester #3345 for iron soldering of brass and copper.
2. Tin-bearing flux such as "Flux-N-Solder E127 with pure tin" by Johnson Manufacturing.

E. Aluminum fascias, hook strips, drip edges and miscellaneous trim: #3105-H14 alloy aluminum, minimum thickness .050 inches unless otherwise indicated, factory finished with a Fluoropolymer Kynar 500 finish, color as selected by the Architect, from the full range of custom and standard colors.

F. Factory Fabricated Roof Edge System: Extruded aluminum anchor bars secured with #9 stainless steel screws spaced 12 inches on center and .050 inch thick Kynar 500 prefinished aluminum trim covers, independently tested to comply with the ANSI / SPRI ES-1 Wind Design Guide.

G. Fasteners: fabricated of stainless steel, or material that matches the sheet metal being fastened.

H. Eveco ventilators: single cone gravity type ventilators, with no moving parts, fabricated of mill finish aluminum, furnished with #8 aluminum insect screen, 1/2 inch aluminum bird screen and factory fabricated curb mount bases, as manufactured by Empire Ventilation Equipment Co., Inc., Long Island City, NY.

I. Turbine ventilators: Turbine ventilator, fabricated of mill finish aluminum, furnished with #8 aluminum insect screen, 1/2 inch aluminum bird screen and factory fabricated curb mount bases, as manufactured by Empire Ventilation Equipment Co., Inc., Long Island City, NY.

J. Leader Boots: Hollow rectangular structural steel tube sections, with 1/4 inch thick walls, fabricated with 4 inch high “hubs” welded to the top, sized to match the leaders draining into them.

1. Fabricate the leader boots with welded adapters, to create a smooth water tight transition to the underground drain pipe.

2. Fabricate the leader boots with 3 inch diameter clean out plugs, positioned about 12 inches above grade; by welding half of a typical threaded coupling onto the side of the boot at a 45 degree angle, and install a threaded / removable plug into the coupling.

3. Grind all welds smooth, then shop prime and paint the leader boots with two coats of finish paint prior to installation. Touch up paint minor scratches after installation.

K. PVC drain pipe: minimum 4 inch diameter, minimum .120 inch thick solid wall pipe, International Association of Plumbing & Mechanical Officials – Uniform Plumbing Code listed pipe meeting ASTM D3034 SDR-35, with factory formed and solvent welded fittings.

L. Glass Cloth: open mesh glass fabric coated on each side with plasticized asphalt as manufactured by Karnak Corporation or equal.

M. Asphalt cement: Federal Specification SS-C-153B, Type 1, asbestos free grade.

N. Exterior mounted gutters: 7 inch wide, .050 inch thick aluminum seamless, factory finished with Kynar 500 finish, box style gutters (manufactured by Garrety Gutters 800/628-5849) supported with concealed aluminum fascia brackets spaced 12 inches on center fastened with 1-1/2 inch long stainless steel screws. See drawings for locations of 7” box style gutters.

O. Exterior mounted leaders and straps: .027 inch thick rectangular corrugated aluminum leaders factory finished with baked acrylic enamel. Fasten each leader with 1/16 inch thick by 1 inch wide straps spaced 7 feet on center.

P. Sealant: High performance, solvent free, formulated and moisture curing silyl-terminated polyether sealant, ASTM C-920, Type S, Grade NS, Class 25, NovaLink construction sealant by ChemLink, color as selected.

Q. Wall and soffit panels: .032 inch thick V-groove profile interlocking aluminum panels with concealed fasteners, baked acrylic enamel paint finish, color as selected, manufactured by Fabral under the trade name Posi-Lock, or Firestone UnaClad UC-750

R. Hat Sections: 20 gauge galvanized steel sections in sizes shown on the drawings.

S. Ice and Water Shield: high temperature 30 mil thick slip resistant buytl based adhesive coated sheet, with a plastic release layer for peel and stick application directly to a prepared roof deck: Grace Ultra.

PART 3 - EXECUTION

3.1 GENERAL

A. Accurately reproduce the details and design shown, and form profiles, bends and intersections, sharp, true and even. Fabricate sheet metal in the shop whenever possible, and form joints, laps, splices and connections to shed water and condensation in the direction of flow.

B. Provide any miscellaneous flashing and sheet metal work not shown on the drawings but otherwise needed to leave the project complete and entirely watertight, neatly and carefully executed in a thorough and workmanlike manner.

3.2 INSPECTION

A. Examine surfaces to receive work of this section and report any defects to the Owner. Commencement of work will be construed as complete acceptance of surfaces.

3.3 INSTALLATION

A. Fabricate and install copper work in accordance with the current edition of "Copper and Common Sense" as published by the Revere Copper and Brass Company, unless otherwise indicated.

1. Form all joints, except loose locked sealant filled expansion joints, to overlap 2 inches.

2. Secure the joints with rivets spaced 1 inch on center positioned about 1/2 inch from the top edge of the joint, then sweat solder the joint.

3. Use solder only to fill and seal the joint, not for mechanical strength. Form soldered joints continuous, strong and free from defects, with well heated soldering irons. Do not use open flame torches for soldering.

4. Clean soldered joints daily, immediately after soldering, by washing them with soap and water applied with a soft bristle brush, then rinsing with clear water.

B. Securely fasten and anchor all work, and make provisions for thermal expansion. Submit details of expansion joints for approval. Install fasteners through one edge of metal only, use a hook strip on the other edge.

C. Use stainless steel pin Zamac type nail-in fasteners, or stainless steel screws and washers with neoprene inserts where fasteners will be exposed.

3.4 CAP FLASHINGS

A. Install new copper cap flashings built into masonry walls properly joined to all related materials in a watertight manner.

1. Solder all joints in the new cap flashing, except form 2 inch wide flat locked sealant filled expansion joints a maximum of 32 feet on center.

2. Form the flashing to turn up 2 inches inside the wall and finish with a hem on the bottom exposed edge.

3. Fasten the top edge of the cap flashing to the back up masonry 12 inches on center.

4. Install the new cap flashing under flexible type wall flashings where possible. Where it is not possible to lap the new cap flashing under an existing wall flashing, install a ply of glass cloth set in and coated with asphalt cement to connect the new cap flashing to the existing wall flashing.

5. In the absence of an existing wall flashing, or at a solid masonry wall, turn up the new cap flashing 2 inches behind the first wythe of masonry.

6. Install new cap flashings where shown on the drawings, and at a height of 10 to 12 inches above the roof surface.

B. Install new aluminum cap flashings on skylight and equipment curbs.

1. Form the cap flashing to extend at least 2 inches under the equipment or skylight, 4 inches over the base flashing, and finish with a 1/2 inch hem on the bottom edge.

2. Install a 1/2 inch thick by 2 inch wide continuous foam gasket between the cap flashing and mechanical equipment or skylight. Do not set the equipment or skylight in sealant.

3. Secure the equipment or skylight to the curb with stainless steel screws spaced 12 inches on center.

3.5 DRIP EDGES

A. Fabricate drip edges to extend 1-1/2 inches past the roof edge, and turn down to ensure water cannot track back and run down the fascia. Secure the drip edge with roofing nails along the top edge, spaced 4 inches apart along the raw metal edge. Form joints in the drip edge with 6 inch wide concealed under plates which duplicate the profile of the drip edge. Set the underplates in a full bed of sealant.

3.6 HOOK STRIPS

A. Form continuous hook strips with locks that engage the superimposed trim piece a minimum of 3/4 inch, and to cover the entire underside edge of the wood blocking and neatly extend to the building wall.

B. Fasten hook strips along their bottom edge, just above the 45 degree bend, with nails spaced 4 inches on center into underlying wood blocking; Zamac type nail-in type fasteners spaced 8 inches on center into masonry surfaces, or screws spaced 8 inches on-center into sheet metal surfaces.

3.7 FASCIA

A. Fabricate new fascia to engage the hook strip 3/4 inch minimum and extend to the top of the wood fascia blocking. Secure the fascia with a continuous hook strip along the bottom edge and roofing nails along the top edge spaced 8 inches apart, positioned to be covered by the roof edge trim. Form joints in the fascia with 6 inch wide concealed under plates which duplicate the profile of the fascia. Set the underplates in a full bed of sealant.

3.8 ROOF EDGE SYSTEM

A. Install a factory fabricated roof edge system on all roof eaves.

1. Extend the roof to lap over and down the face of the fascia trim, so it stops just short of the bottom edge of the anchor bar.

2. Install the anchor bar straight, level and true, set in a full bed of sealant, and secure the bar with #9 by 2 inch long stainless steel screws spaced no more than 12 inches apart.

3. Pre-drill screw holes in the underlying metal fascia trim, where extra fasteners are needed, and at corners and special conditions.

4. Install color matching under plates at each joint in the roof edge trim; set the under plates in a full bed of sealant.

3.9 CHIMNEY CAPS & HOODS

A. Fabricate new chimney caps and hoods from zinc-tin coated copper; to cover the entire top of the chimney, to overlap the exterior bed joint 2 inches, and to extend up and over the flue liners and turn down inside them.

Turn the cap down 4 inches inside the chimney if there are no flue liners. Cover all masonry between the flues. Fasten the chimney cap with a hook strip under the outside edge and Zamac type fasteners spaced 12 inches apart along the inside edge if there is no clay flue liner.

B. Position the hood a minimum of 18 inches above the top of the flues to provide adequate exhaust clearance.

C. Support the hood with 1/4 by 1-1/2 inch half twisted stainless steel bars, spaced and braced, approximately 12 inches apart at the perimeter of the hood.

3.10 LEADER BOOTS & UNDERGROUND PIPE

A. Install new 6 inch diameter underground PVC drain lines, with surface clean out fittings and leader transition adapters at exterior leader locations.

1. Saw cut, remove and neatly replace bituminous pavement and concrete sidewalk areas.

2. Carefully excavate and restore grass and planted areas.

3. Bury the new PVC drain lines a minimum of 24 inches deep and slope them 1/4 inch per foot towards out-flow connection points.

3.11 WALL PANELS

A. Install hat sections at the top and bottom and in equally spaced horizontal rows in between, a maximum of 2 feet on center, to support the panels.

B. Fasten each hat sections to the substrate with screws or Zamac nail-ins (depending on substrate) spaced 12 inches on center.

C. Install panels plumb, level, and straight with seams parallel, to achieve the design appearance indicated.

D. Fasten the panels to each hat section with concealed stainless steel screws in each seam, and with exposed screws in each V-groove only along the bottom edge, spaced 6 inches on center.

3.12 SOFFIT PANELS

A. Install hat sections in equally spaced rows a maximum of 16 inches on center, to support the panels.

B. Fasten each hat sections to the substrate with screws or Zamac nail-ins (depending on substrate) spaced 12 inches on center.

C. Install ‘J’ mold and trim pieces in full lengths, with the ends notched to form a telescoping 3inch overlap. Face the overlaps to shed water, and where visible from the ground, away from prominent building entrance locations. Set the trim overlap into a full bed of sealant which matches the color of the trim.

D. Install panels level, and straight with seams parallel, to achieve the design appearance indicated.

E. Fasten the panels to each hat section with concealed stainless steel screws in each seam spaced 6 inches on center.

3.13 CLEANING, PROTECTION AND WATERTIGHTNESS

A. Inspect the interior and exterior of the building and grounds, and submit a written report with photos to document any pre-existing leakage or damage, prior to performing any work.

B. The Owner will conduct a similar inspection at the completion of the work, and the Contractor will be charged for all leaks and damage that weren't documented in the Contractor's report, or repaired to the Owners satisfaction at the Contractor's expense.

C. Provide any equipment, material and labor necessary to protect the site, the building, its contents and occupants, pedestrians, and surrounding landscaped and paved areas from damage due to the construction work or from inclement weather during construction.

D. Do not perform work during inclement weather. Protect incomplete work and the building from damage by inclement weather - which may occur unexpectedly. Make all work areas watertight at the end of each day's work.

E. Clean up all litter, refuse, rubbish, scrap materials and debris at least twice a day; at noon and at the end of the work day, so the roof and site are neat, orderly and workmanlike. Place the debris in a dumpster, and remove the dumpster from the site as soon as it is full or no longer being used.

F. Carefully and thoroughly clean the entire roof to remove all residual debris when all work is complete. After cleaning the roof, thoroughly clean all drain sumps, drain lines, leader heads and leaders. Do not allow debris to enter the drainage system.

END OF SECTION

SECTION 07 7200
ROOF ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. All plant, labor, materials, equipment, testing and services necessary to complete the work shown on the drawings, schedules and keynotes, as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but not limited to, the following:

1. Roof specialties that are compatible with the roofing systems specified:

    a. Plastic skylights.
    b. Louvered penthouse ventilators.
    c. Wall louvers
    d. Pre-fabricated curbs and equipment supports.
    e. Drains, drain pipes and couplings.
    f. Pipe insulation and fitting covers.
    g. Aluminum smoke vent hatches.
    h. Aluminum access hatches.
    i. Hatch safety rails.
    j. Galvanized steel roof access ladders and stairs.
    k. Gas line and equipment pipe supports.
    l. Roof walkway pads and concrete pavers.
    m. Snow guard assemblies.

2. Prepare, prime and paint all roof top equipment, the access ladders, equipment support dunnage, bulkhead doors and frames (inside and outside) and miscellaneous rooftop items indicated.

B. Related Requirements

1.	Masonry Maintenance	- Section 04 0100
2.	Carpentry	- Section 06 1000
3.	EPDM Roofing	- Section 07 5323
4.	Sheet Metal Flashing & Specialties	- Section 07 6200

1.3 CODE APPROVAL REQUIREMENTS

A. Fabricate and install roof accessories that comply with the NY State Uniform Fire Prevention and Building Code.

1.4 QUALITY ASSURANCE

A. Installer Qualifications:

1. A firm (Installer) with at least 5 continuous years experience performing work similar to that required for this project, employing personnel skilled in the work specified.

    a. The Installer shall directly employ the personnel performing the work of this section.

b. The Installer shall have a full time supervisor on the roof when work is in progress. The Supervisor shall have a minimum of 5 years experience with work similar in nature and scope to this project, and speak fluent English.

1. Submit the supervisor's resume upon request.

2. The Installer shall provide a reference list of at least three previously completed projects of comparable size and similar design, within a fifty mile radius of this project, which may be observed by representatives of the Owner:

a. The reference list shall include at a minimum, the completion date, a description of the work performed, the Owner's name - contact person - phone number and address and the Architect's name - contact person and phone number, and the Contractor's Supervisor's name.

b. Submit the reference list upon request.

B. Material Quality: Obtain each product from a single Manufacturer which has manufactured the same product in the United States of America for not less than 5 continuous years.

C. Pre-Construction Conference: Meet at the project site between one and two weeks prior to starting work, with the Architect, Owner and other representatives concerned about the work, to discuss the following:

1. How the building will be kept watertight as work progresses.

2. How roof accessory work will be coordinated with the installation of the vapor barrier, insulation, cover board, roofing, flashings, and other items to provide a watertight installation.

3. Generally accepted industry practice and the Manufacturer's instructions for handling and installing his products.

4. The condition of the substrate, curbs, penetrations and other preparatory work needed.

5. Incomplete submittals; note that progress payments will not be processed until all submittals are received and approved.

6. The construction schedule, forecast weather, availability of materials, personnel, equipment and facilities needed to proceed and complete the work on schedule.

7. A schedule for Manufacturer and Architect inspections.

1.5 SUBMITTALS

A. Submit the following items far enough in advance to obtain approval prior to performing any work:

1. A pre-work site and building inspection report with photos to document conditions before work starts.

2. Manufacturer's installation instructions and technical data sheets for each item. Material sample submittals are not needed unless requested to show color and texture.

3. Samples of the Contractor's and Manufacturer's guarantee/warranty forms.

4. Test reports and certifications substantiating compliance with specification requirements if requested by the Architect.

B. Simultaneously provide all technical submittals needed for this project, for all technical sections, collated by section. Incomplete submittals will not be reviewed.

1. Submittals shall be prepared and made by the firm that will perform the actual work.

2. Provide electronic submittals via an on-line submittal exchange program if one is established for this project; if an on-line program isn't established, provide the submittals on portable USB drives in pdf format, organized in folders by Section.

C. Safety Data Sheets: Simultaneously provide all Safety Data Sheets needed for this project, for all specification sections - collated by section, in three ring binders. Provide two binders for each building.

D. Payment requisitions will not be processed until all submittals are received and approved.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver material to the site in the Manufacturer's original and unopened packaging, with intact and legible labels which identify the products and Manufacturers,

B. Cover all stored materials with watertight tarpaulins installed immediately upon delivery.

C. Do not overload the structure when storing materials on the roof.

D. Protect roof surfaces where material and equipment are placed on them, and where construction traffic occurs, with 6 mil fire retardant polyethylene, covered with 1-1/2 inch thick foam insulation, overlaid with 2 by 10 wooden planks.

1.7 GUARANTEE

A. Provide a written Contractor's Guarantee which guarantees that all work will remain free of material and workmanship defects and in a watertight condition for five years beginning upon Final Completion:

1. Defects include but are not limited to the following: peeling paint, leakage, adhesive separation, delamination, lifting, loosening, splitting, cracking, movement and undue expansion.

2. The Contractor shall make the repairs and modifications necessary to enable the work to perform as warranted at his own expense.

3. Guarantee coverage shall include removing and replacing materials installed as part of the original work, if removal is needed to affect repairs.

4. Guarantee coverage shall have no dollar limit.

B. Provide one Contractor’s Guarantee that covers “all work performed” when a single contractor is awarded work specified in multiple Sections.

C. The Guarantee shall take affect no more than 30 days before the satisfactory completion of all punch list work.

D. The Contractor’s Surety Company may add a rider to the Performance Bond which clarifies that Performance Bond Coverage expires two years after Final Completion; i.e., Performance Bond Coverage does not run for the entire five year term of the Contractor’s Guarantee.

E. Provide a Manufacturer's written warranty, which warrants the skylights will remain watertight for a minimum 5 year term beginning upon final completion.

PART 2 - PRODUCTS

2.1 GENERAL

A. Provide Manufacturer's standard units, modified as necessary to comply with the specified requirements. Fabricate each unit in a shop to the greatest extent possible, using the following components:

1. Aluminum Sheet: ASTM B 209 alloy 3003, tempered for forming and performance; mill finish, except as otherwise noted.
2. Extruded Aluminum: Standard extrusions alloy 6063-T52; 0.078 inch minimum thicknesses for primary framing and curb member legs, 0.062 inch thickness for secondary framing and covers; mill finish, except as otherwise indicated.
3. Insulation: Rigid fiber glass boards where encapsulated inside metal skirts, rigid isocyanurate where covered with roof flashings on the exterior of curbs.
4. Wood Nailers: Dimension grade Douglas Fir, not less than 1-1/2 inches thick.
5. Fasteners: Nonmagnetic stainless steel or hot dipped galvanized steel, to match the finish of the material being fastened.
6. Gaskets: Tubular neoprene or polyvinyl chloride, or block sponge neoprene.
7. Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.

2.2 PLASTIC SKYLIGHTS

A. Factory assembled dome and frame assemblies with welded corners manufactured by Kingspan / Bristolite or American Skylights are specified to establish a quality standard. Equal products are acceptable provided they comply with the following requirements:

1. Glazing sheet thickness required for a minimum of 30 pounds per square foot external and 30 pounds per square foot internal loading; and to comply with the minimum thickness and wind pressure requirements of AAMA/WDMA/CSA 101/I.S.2/A440 as set forth in paragraph 2405.5 of the NYS Uniform Fire Prevention and Building Code.

2. Outer Dome: Dome shaped polycarbonate meeting the following tests:
   a. Burn Rate — ASTM D635 - Not over 2.5
   b. Smoke Developed — ASTM D2843
   c. Smoke Density — Not over 75%

3. Inner Panel: Clear multiwall polycarbonate panel meeting the following tests:
   a. Burn Rate — ASTM D635 - Not over 2.5
   b. Smoke Developed — ASTM D2843
   c. Smoke Density — Not over 75%

4. Fall Protection: Fabricate the skylights so the dome and panel will not disengage from the frame upon impact of 755 foot pounds, and to comply with OSHA 1910.23 Fall Protection Guidelines.

5. Energy Performance Ratings:
   a. Maximum U-factor 0.50
   b. Solar Heat Gain Coefficient (SHGC) of 0.40

B. Curb Construction: Provide units with integral internal gutters and weep holes to drain condensation; fabricated with formed and extruded thermally broken welded aluminum frames and retaining angles for installation on field constructed curb assemblies.

C. Safety Screens: 4 inch by 4 inch 6 gauge welded wire screens and 1/4 inch thick 1-1/2 by 1-1/2 steel perimeter angle support frames, fabricated to fit within the skylight curb - to protect the skylights from underside damage and increase fall protection.
   1. Prime and paint the screens flat white before installation.
   2. Install screens at skylights above gymnasiums.
   3. Install screens at over-sized skylights where the glazing doesn't provide fall protection.

2.3 LOUVERED PENTHOUSE VENTILATORS

A. Factory fabricated penthouse assemblies for mounting on field constructed curbs, incorporating .081 inch thick extruded aluminum louver blades, hidden mullions, 1-1/2 by 1-1/2 by 1/8 inch aluminum angle framing, 18-14 aluminum mesh insect screens, and .050 inch thick aluminum covers, manufactured by United Enertech: Model PEL-4-SN Harsh Weather Penthouse, height sized to provide a net free louvered opening equal to the size of the deck opening.

2.4 PRE-FABRICATED CURBS AND EQUIPMENT SUPPORTS

A. Factory fabricated of welded 14 gauge galvanized steel, insulated with minimum 1-1/2 inch thick 3 pound density rigid insulation, with nominal 2 by 2 inch wood nailers and T bar reinforcing on sides longer than 36 inches; 24 inches high.

B. Where the roof deck slopes more than 1/4 inch per foot, provide tapered curbs to match the slope, and install the equipment level.

2.5 WALL LOUVERS

A. Factory fabricated wall louvers to fit within the revised wall openings, incorporating 2 inch deep, .081 inch thick extruded aluminum louver blades, hidden mullions, extruded aluminum frames, 18-14 aluminum mesh insect and bird screens manufactured by United Enertech.

2.6 PRE-FABRICATED CURBS AND EQUIPMENT SUPPORTS

A. Factory fabricated of welded 14 gauge galvanized steel, insulated with minimum 1-1/2 inch thick 3 pound density rigid insulation, with nominal 2 by 2 inch wood nailers and T bar reinforcing on sides longer than 36 inches; height to extend above the finished roof surface a minimum of 10 inches, Model ES-2 by Pate Inc.

B. Where the roof deck slopes more than 1/4 inch per foot, provide tapered curbs to match the slope, and install the equipment level.

2.7 DRAINS, DRAIN PIPES, AND COUPLINGS

A. Conventional cast iron bottom and side outlet roof drains, installed with drain receivers, under deck clamps, cast iron strainers, cast iron clamping rings and factory installed stainless steel gravel screens Series 1011 as manufactured by Jay R. Smith Manufacturing Company.

B. Cast iron scupper drains, installed with brass clamping rings and strainers, bottom, side and angle outlet drains, Series 1510 through 1540, as manufactured by Jay R. Smith Manufacturing Company.

C. Match the drain outlet size and style to the building drain line, except if the drain line is a copper pipe, then furnish the drain body with a threaded outlet and use a male adapter to connect the drain body to the drain line.

D. Drain pipe: cast iron pipe with no hub fittings, minimum 3 inch diameter, and larger to match the existing building drain lines.

E. No-hub couplings: heavy duty rubber neoprene sleeve couplings with full length Type 304 stainless steel shields and at least 4 worm drive clamps, conforming to ASTM A564.

2.8 PIPE INSULATION AND FITTING COVERS

A. Insulation: minimum 1 inch thick pre-molded 3.5 lb. heavy density fiberglass pipe insulation with UL rated non-combustible service jackets.

B. .030 inch thick factory fabricated white PVC "Smoke Safe" fitting and drain bowl covers as manufactured by the Speedline Corporation, with a maximum Flame Spread Value of 25 and a maximum Smoke Developed Value of 50 in accordance with ASTM E8450.

2.9 ALUMINUM SMOKE VENT HATCHES

A. UL listed single and double leaf hatches constructed with welded double wall 11 gauge mill finish aluminum covers that incorporate insulation, and 24 inch high aluminum curbs complete with louvers on three sides, counter flashings, neoprene draft seals, 3-1/2 inch deck flanges, interior and exterior handles and tamper resistant hinges contained within the hatch, as manufactured by The Bilco Company.

1. Furnish the units with manual, fusible link and electric releases that can be reset without having to replace any parts.

    a. Match the electric release voltage to the local smoke detector and alarm system.

B. Furnish hatches with 4 inch by 4 inch 6 gauge galvanized steel welded wire safety screens supported on 1-1/2 by 1-1/2 by 1/4 inch thick steel perimeter angle support frames.

C. Furnish the units in the sizes needed to fit the deck openings, and as indicated.

2.10 ALUMINUM ACCESS HATCHES

A. Hatches constructed of welded 11 gauge mill finish aluminum, with 12 inch high curbs and integral cap flashings, heavy pintle hinges, compression spring operators, a spring latch with interior and exterior handles, an interior padlock hasp, and stainless steel hardware, as manufactured by the Bilco Company, in the sizes needed to fit the deck openings, and as indicated.

2.11 HATCH SAFETY RAILS

A. Safety rails shall comply with OSHA Standard CFR 29 1910.23 and CFR 29 1910.27

B. Safety rails shall be bolted to the exterior surface of the curb above the flashing with 3/8 inch diameter stainless steel bolts, constructed of 1-1/2 inch diameter hot rolled electrically welded tubing meeting ASTM A500 Grade B, sized and configured to provide a safety railing on four sides of the hatch 42 inches above the roof surface with a self closing gate supported with heavy duty hinges with 5/8 inch diameter pins - basis of design: Roof Hatch Safety Rails by SafePro Roof Top Fall Protection.

C. Gate shall be fabricated of galvanized steel tubing, with no chains or latches.

2.12 GALVANIZED STEEL ROOF ACCESS LADDERS AND STAIRS

A. Fabricate ladders from 1-1/4 inch inside diameter steel pipe rails, spaced 22 inches apart, and 3/4 inch solid steel rebar rungs spaced 12 inches on center. Fit the rungs into drilled holes in the centerline of the rails, weld and grind the welds smooth. Extend the ladder rails and form goose-neck returns to finish 42 inches above the roof surface.

1. Hot dip galvanize coat the ladder and mounting brackets after fabrication. Install with Type 316 stainless steel hardware.

B. Fabricate stairs from C 10 x 15.3 steel stringer channels, McNichols Standard Serrated Non-Slip Bar Grating Stair Treads and 1-1/4 inch inside diameter steel pipe railings.

1. Use treads formed with 1-1/4 by 3/16 inch bearing bars spaced 1-3/16 inches on center and cross bars spaced 4 inches on center – for treads up to 36 inches wide.

2. Weld and grind all welds smooth.

3. Hot dip galvanize the stringer channels, railing and mounting brackets after fabrication. Assemble and install stair assemblies with Type 316 stainless steel hardware.

2.13 GAS LINE AND EQUIPMENT PIPE SUPPORTS

A. Factory fabricated adjustable pipe supports as manufactured by Miro Industries, Inc. Model 20-Base Strut-12.

2.14 ROOF WALKWAY PADS AND CONCRETE PAVERS

A. 2 inches thick, 24 inches by 24 inches precast concrete pavers, natural buff color and finish, minimum 7500 psi compressive strength as manufactured by Hanover Architectural Products.

B. 30 inches by 30 inches hard rubber black walkway pads manufactured by Firestone.

2.15 SNOW GUARD ASSEMBLIES

A. EPDM roofs: 2 pipe snow guard assembly consisting of 1 inch outside diameter aluminum pipes, a 1/8 inch thick Type 302 stainless steel base plate, and milled 6061-T6 aluminum snow guard block and # 95 Ice Flags as manufactured by Alpine Snow Guards, Model #115.

2.16 PAINT AND PRIMER

A. Alkyd base rust inhibiting exterior primer and high gloss finish paint for ferrous metal surfaces as manufactured by Benjamin Moore or equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Field measure existing openings. Comply with manufacturer's instructions and recommendations. Coordinate with the installation of roof deck, other substrates to receive specialty units, vapor barriers, roof insulation, roofing and flashing to ensure that each element of the work performs and fits properly, and that combined elements are waterproof and weathertight. Anchor units securely to supporting structural substrates, adequate to withstand lateral and thermal stresses as well as inward and outward loading pressures.

3.2 PLASTIC SKYLIGHTS & SAFETY SCREENS

A. Remove the existing skylight and curb assembly using care not to damage the roof deck or skylight well liner. Re-support ceiling and shaft components that are attached to the skylight curb or shaft liner. Construct or extend the existing curb to finish 10 inches above the roof surface. Install new base and cap flashings, and restore & finish the shaft liner to match the original construction. Install the new skylight on top of a 1/2 inch by 2 inch foam gasket.

B. Install new safety screens to fit inside the skylight curbs at all skylights installed above gymnasiums, elsewhere where indicated, and to meet OSHA Fall Protection Guidelines where oversize plastic skylights lack integral fall protection. Wire brush, prime and install two finish coats of paint on the screens prior to installation. Fasten the screens with 3/8 inch diameter lag bolts spaced 12 inches on center around the entire perimeter of the screens.

3.3 LOUVERED PENTHOUSE VENTILATORS

A. Construct a wood curb to extend 10 inches above the roof surface. Install new base and cap flashings, restore the curb liner to match the original construction, and install the penthouse assembly on top of a 1/2 inch by 2 inch foam gasket.

3.4 WALL LOUVERS

A. Modify and rebuild the wall openings, and install the new louvers slightly recessed from the exterior wall surface, over a tin coated copper cap flashing at the sill. Create 1/2 inch wide sealant joint at the perimeter of the louvers, with weep holes spaced 12 inches on center along the sill.

3.5 PRE-FABRICATED CURB AND EQUIPMENT SUPPORTS

A. Install curb assemblies directly on the structural deck or block solid under the assembly to achieve the height shown and to install the curb assembly level.

B. Install new base and cap flashings prior to installing the mechanical equipment. Set mechanical equipment on 1/2 inch thick anti vibration pads.

3.6 DRAINS, DRAIN PIPES AND COUPLINGS

A. Remove and replace the existing drains where roof removal and replacement work is indicated:

1. Remove the existing drains and flashings; use care not to break or disturb the drain pipes within the building.

2. Modify the existing drain lines to properly connect to the new drain assemblies.

3. Enlarge the hole in the deck and reinforce the deck to accommodate the new drain, and install the drain recessed below the roof surface to achieve maximum drainage.

4. Support the drain with a stamped sump drain receiver, secure it with an under deck clamp and patch the deck around the new drain.

5. Connect the new drain to the existing drain line to conform to all applicable codes, and insulate the underside of the drain body and drain line.

B. Note where existing drains are being relocated and where additional drains are being installed. Reinforce the underside of the deck at new drain locations. After installing the drains as described above, install new drain pipe to connect each new drain to the existing storm sewer system.

C. Connect the fittings and sections of cast iron pipe using heavy duty no-hub couplings; solvent weld PVC fittings and pipe, and use threaded connections to join steel fittings and pipe.

D. Install new drain pipes to slope 1/4 inch per foot, and support each section of pipe with a hanger, supported on a structural member or strut, on each side of every coupling. Do not rely on the couplings to support any weight. Do not hang the drain pipes from the roof deck.

3.7 PIPE INSULATION AND FITTING COVERS

A. Install insulation on all horizontal drain piping, and on new vertical pipes installed to connect the new drains to the existing lines.

B. Install insulation on the undersides of the new drains.

C. Install white PVC fitting and drain bowl covers, and wrap the joints between fitting covers and pipe insulation jackets with 3 inch wide white PVC tape.

3.8 ROOF HATCHES AND GUARD RAILS

A. Carefully remove existing roof hatch assemblies, wood blocking and shaft lining components.

B. Cut and remove portion of the existing deck and install new steel angles to reinforce the deck opening where new hatches are being installed at new locations.

C. Block solid under the hatch curb to support it at the level of the new roof; extend and restore the shaft liner.

D. Orient the hatches for proper egress, and install new flashings.

E. Install guard rails, fastened to the hatch frame, above the roof flashings.

3.9 SMOKE VENT HATCHES

A. Remove the existing smoke hatch assemblies and related flashings. Modify any electrical conduits, sprinkler and heating system pipes which protrude above the level of the new curb.

B. Install new steel beams and metal decking to re-configure the deck opening.

C. Support the new smoke vent curbs on solid wood blocking that matches the height of the new roof.

D. Connect the smoke vent hatches to a local smoke detector and the existing smoke alarm system. Test the smoke hatches to the satisfaction of the Architect and Owner.

E. Install new safety screens to fit inside the curb openings. Wire brush, prime and install two finish coats of paint prior to installation. Fasten the screens with 5/16 inch diameter lag bolts / expansion bolts / epoxy set bolts spaced 12 inches on center around the entire perimeter of the screens.

3.10 GALVANIZED STEEL ROOF ACCESS LADDERS

A. Install ladders at the interior and exterior locations shown. Support and secure each ladder at the top and bottom and at intermediate points spaced a maximum of 5 feet on center. Use bolted steel brackets, anchored with 1/2 inch diameter stainless steel epoxy set bolts. Space the ladders to provide 7 inches of toe clearance. Extend the rails 42 inches and goose-neck form them to provide additional support at the top of the ladder.

B. Install new stairs at the exterior locations shown. Set the stairs on new concrete pavers over walkway pads. Secure the stairs to the pavers with stainless steel Zamac Nail-ins.

3.11 GAS LINE AND EQUIPMENT PIPE SUPPORTS

A. Install pipe supports spaced five feet on center over a concrete paver and a walkway pad.

B. Fasten pipes and conduits to the new pipe supports with new stainless steel clamps.

3.12 ROOF WALKWAY PADS AND CONCRETE PAVERS

A. Install concrete pavers spaced 5 feet on center for conduit supports, and under equipment indicated on the drawings.

1. Install pavers over a piece of hard rubber walkway pad.

B. Install hard rubber walkway pads to provide a path 2-1/2 feet wide where shown, and at all roof access points, i.e., doors, ladders and hatches, under concrete pavers used for conduit and pipe supports, and around all HVAC equipment.

1. **Adhere each pad with five self adhesive strips - do not install the pads using three strips of tape as supplied by the manufacturer.**

3.13 SNOW GUARD ASSEMBLIES

A. Install snow guard assemblies over solid wood blocking installed in place of the roof insulation. Install brackets spaced 4 feet on center, and fasten each bracket plate to the blocking and underlying roof deck wood purlin beam with six #14 flat head stainless steel screws. Join pipe sections with couplings, and install end caps onto each end of all pipes. Secure each length of pipe with set screw collars or by inserting 3/16 inch cotter pins into holes drilled on each side of the center bracket.

B. Install ice flags spaced 8 inches on center. Keep ice flags 1/2 inch above the roof membrane.

3.14 PAINTING

A. Scrape and wire brush roof top equipment, ladders, access doors and frames (both sides), the guard rail, and the vent pipes to remove loose and peeling paint and surface rust.

B. Install one coat of primer and two finish coats of paint using a brush or roller. Wait 24 hours for each coat of paint to dry before applying the next coat.

3.15 MISCELLANEOUS

A. Provide and install any sealants needed, where shown or required.

B. Perform mechanical and electrical work using skilled and licensed tradesmen.

C. Provide new material, couplings, transition pieces, blocking, fasteners and the similar accessories needed to complete the work.

3.16 CLEANING, PROTECTION AND WATERTIGHTNESS

A. Inspect the interior and exterior of the building and grounds, and submit a written report with photos to document any pre-existing leakage or damage, prior to performing any work.

B. The Owner will conduct a similar inspection at the completion of the work, and the Contractor will be charged for all leaks and damage that weren't documented in the Contractor's report, or repaired to the Owners satisfaction at the Contractor's expense.

C. Provide any equipment, material and labor necessary to protect the site, the building, its contents and occupants, pedestrians, and surrounding landscaped and paved areas from damage due to the construction work or from inclement weather during construction.

D. Do not perform work during inclement weather. Protect incomplete work and the building from damage by inclement weather - which may occur unexpectedly. Make all work areas watertight at the end of each day's work.

E. Clean up all litter, refuse, rubbish, scrap materials and debris at least twice a day; at noon and at the end of the work day, so the roof and site are neat, orderly and workmanlike. Place the debris in a dumpster, and remove the dumpster from the site as soon as it is full or no longer being used.

F. Carefully and thoroughly clean the entire roof to remove all residual debris when all work is complete. After cleaning the roof, thoroughly clean all drain sumps, drain lines, leader heads and leaders. Do not allow debris to enter the drainage system.

3.17 TESTING

A. Test the new smoke hatches with the Architect or Owner present, to demonstrate they are functional, particularly with regard to security, alarm signal operation, and venting. If faults are evidenced, make the needed corrections and repeat the test until no faults occur.

END OF SECTION

SECTION 07 9200
JOINT SEALANTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Self-leveling pourable joint sealants.

C. Acoustical sealant.

D. Joint backings and accessories.

1.3 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions: Additional requirements for sealants and primers.

B. Section 07 2500 - Weather Barriers: Sealants required in conjunction with air barriers and vapor retarders.

C. Section 07 8400 - Firestopping: Firestopping sealants.

D. Section 07 9513 - Expansion Joint Cover Assemblies: Sealants forming part of expansion joint cover assemblies.

E. Section08 8001 - GLAZING: Glazing sealants and accessories.

F. Section 09 2116 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.

1.4 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015.

B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2012 (Reapproved 2017).

C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

D. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2016.

E. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.

F. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2018.

G. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2013.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.

1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
2. List of backing materials approved for use with the specific product.

3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
4. Substrates the product should not be used on.
5. Substrates for which use of primer is required.
6. Sample product warranty.
7. Certification by manufacturer indicating that product complies with specification requirements.

C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

E. Samples for Verification: Where custom sealant color is specified, obtain directions from Fuller and D'Angelo, P.C. and submit at least two physical samples for verification of color of each required sealant.

F. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.

G. Field Quality Control Plan: Submit at least two weeks prior to start of installation.

H. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.

I. Field Quality Control Log: Submit filled out log for each length or instance of sealant installed, within 10 days after completion of inspections/tests; include bagged test samples and photographic records, if any.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.

C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

D. Preinstallation Field Adhesion Test Plan: Include destructive field adhesion testing of one sample of each combination of sealant type and substrate, except interior acrylic latex sealants, and include the following for each tested sample.
1. Identification of testing agency.
2. Preinstallation Field Adhesion Test Log Form: Include the following data fields, with known information filled out.
    a. Test date.
    b. Copy of test method documents.
    c. Age of sealant upon date of testing.
    d. Test results, modeled after the sample form in the test method document.
    e. Indicate use of photographic record of test.

E. Field Quality Control Plan:
1. Visual inspection of entire length of sealant joints.
2. Field testing agency's qualifications.
3. Field Quality Control Log Form: Show same data fields as on Preinstallation Field Adhesion Test Log, with known information filled out and lines for multiple tests per sealant/substrate combinations; include visual inspection and specified field testing; allow for possibility that more tests than minimum specified may be necessary.

F. Field Adhesion Test Procedures:
1. Allow sealants to fully cure as recommended by manufacturer before testing.
2. Have a copy of the test method document available during tests.

3. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
4. When performing destructive tests, also inspect the opened joint for proper installation characteristics recommended by manufacturer, and report any deficiencies.
5. Deliver the samples removed during destructive tests in separate sealed plastic bags, identified with project, location, test date, and test results, to Yonkers Public Schools.
6. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Fuller and D'Angelo, P.C. .

G. Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Destructive Tail Procedure.
1. Sample: At least 18 inch long.
2. Minimum Elongation Without Adhesive Failure: Consider the tail at rest, not under any elongation stress; multiply the stated movement capability of the sealant in percent by two; then multiply 1 inch by that percentage; if adhesion failure occurs before the "1 inch mark" is that distance from the substrate, the test has failed.
3. If either adhesive or cohesive failure occurs prior to minimum elongation, take necessary measures to correct conditions and re-test; record each modification to products or installation procedures.

1.7 MOCK-UP

A. Mockups: Before installing joint sealants, apply elastomeric sealants as follows to verify selections made under sample submittals and to demonstrate aesthetic effects and qualities of materials and execution:
1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.

B. Construct mock-up with specified sealant types and with other components noted.

C. Locate where directed.

D. Mock-up may remain as part of the Work.

1.8 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective work within a five year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal , exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
1. Bostik Inc: www.bostik-us.com.
2. Dow Corning Corporation: www.dowcorning.com/construction/#sle.
3. Sika Corporation: www.usa-sika.com.
4. W.R. Meadows, Inc: www.wrmeadows.com/sle.

B. Self-Leveling Sealants: Pourable or self-leveling sealant that has sufficient flow to form a smooth, level surface when applied in a horizontal joint.
1. Sika Corporation: www.usa-sika.com/#sle.
2. W.R. Meadows, Inc: www.wrmeadows.com/#sle.

2.2 JOINT SEALANT APPLICATIONS

A. Scope:
1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
a. Wall expansion and control joints.

b. Joints between door, window, and other frames and adjacent construction.
c. Joints between different exposed materials.
d. Openings below ledge angles in masonry.
e. Other joints indicated below.

2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
a. Joints between door, window, and other frames and adjacent construction.
b. Other joints indicated below.

3. Do not seal the following types of joints.
a. Intentional weepholes in masonry.
b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
d. Joints where installation of sealant is specified in another section.
e. Joints between suspended panel ceilings/grid and walls.

B. Vertical Exterior Joints: Use non-sag non-staining silicone sealant, unless otherwise indicated.
1. Type ___ - Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane "traffic-grade" sealant.

C. Interior Vertical Joints: Use non-sag non-staining silicone sealant, unless otherwise indicated.
1. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.

D. Exterior and Iinterior Horizontal Joints: Single component, self-leveling, premium-grade polyurethane sealant

2.3 JOINT SEALANTS - GENERAL

A. Sealants and Primers: Provide products with levels of volatile organic compound (VOC) content as indicated in Section 01 6116.

2.4 NONSAG JOINT SEALANTS

A. Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 25 percent, minimum.
2. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
3. Color: To be selected by Fuller and D'Angelo, P.C. from manufacturer's standard range.
4. Cure Type: Single-component, neutral moisture curing
5. Service Temperature Range: Minus 65 to 180 degrees F.
6. Manufacturers:
a. Sika Corporation; Sikasil 728NS: www.usa-sika.com/#sle.
b. Substitutions: 01 2500 - Substitution Procedures

B. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
1. Color: White.
2. Applications: Use for:
a. Use for all perimeter joints of toilet fixtures, cabinets, casework, countertops and similar locations..
3. Manufacturers:
a. 786 Mildew Resistant; Dow Corning.
b. Pecora Corporation; 898 Silicone Sanitary Sealant: www.pecora.com.
c. Sika Corporation; Sikasil GP: www.usa-sika.com/#sle.

d. Sanitary 1700; GE Silicones..

4. Substitutions: 01 2500 - Substitution Procedures

C. Type Acoustical Sealant: - Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-hardening, non-sagging; not intended for exterior use.

1. Color: To be selected by Fuller and D'Angelo, P.C. from manufacturer's standard range.
2. Grade: ASTM C834; Grade - Minus 18 Degrees C.
3. Manufacturers:
   a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant: www.pecora.com.
4. Applications: Use for:
   a. Use for all interior joints of where acoustical sealant indicated.
5. Substitutions: 01 2500 - Substitution Procedures

2.5 SELF-LEVELING SEALANTS

A. Self-Leveling Silicone Sealant: ASTM C920, Grade P, Uses M and A; single or multicomponent, explicitly approved by manufacturer for traffic exposure when recessed below traffic surface; not expected to withstand continuous water immersion.

1. Movement Capability: Plus 100 percent, minus 50 percent, minimum.
2. Hardness Range: 0 to 15, Shore A, when tested in accordance with ASTM C661.
3. Color: To be selected by Fuller and D'Angelo, P.C. from manufacturer's standard range.
4. Service Temperature Range: Minus 40 to 180 degrees F.
5. Manufacturers:
   a. Sika Corporation; Sikaflex 1c SL: www.usa-sika.com/#sle.
   b. Use for all horizontal exterior joints and Interior joints in wet areas..
   c. Substitutions: 01 2500 - Substitution Procedures

B. Type ___ - Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; single or multi-component; explicitly approved by manufacturer for traffic exposure; not expected to withstand continuous water immersion .

1. Movement Capability: Plus and minus 25 percent, minimum.

2.6 ACCESSORIES

A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.

1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open Cell Polyurethane.
2. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type C - Closed Cell Polyethylene.
3. Open Cell: 40 to 50 percent larger in diameter than joint width. (Not to be used in flat or horizontal joints)
4. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width. (Use for flat and hoizontal joints)

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

D. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

D. Preinstallation Adhesion Testing: Install a sample for each test location indicated in the test plan.
   1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
   2. Notify Fuller and D'Angelo, P.C. of date and time that tests will be performed, at least 7 days in advance.
   3. Record each test on Preinstallation Adhesion Test Log as indicated.
   4. If any sample fails, review products and installation procedures, consult manufacturer, or take whatever other measures are necessary to ensure adhesion; re-test in a different location; if unable to obtain satisfactory adhesion, report to Fuller and D'Angelo, P.C. .
   5. After completion of tests, remove remaining sample material and prepare joint for new sealant installation.

3.2 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.3 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

D. Install bond breaker backing tape where backer rod cannot be used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

H. Self-leveling joints: Recess joint depth as recommended by the sealant manufacturer.

3.4 FIELD QUALITY CONTROL

A. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.

B. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

END OF SECTION

SECTION 08 4500
TRANSLUCENT WALL ASSEMBLIES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. Structural sndwich panels of translucent skins separated with an aluminum grid.

B. Aluminum sill flashing.

C. Aluminum thermal break windows.

1.3 RELATED REQUIREMENTS

A. Section 04 0110 - General Maintenance of Masonry.

B. Section 07 9200 - Joint Sealants: Sealing joints between perimeter frame and adjacent construction.

1.4 REFERENCE STANDARDS

A. AAMA CW-DG-1 - Aluminum Curtain Wall Design Guide Manual; 1996, with Editorial Revision (2005).

B. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2015.

C. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems; 2015.

D. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.

E. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.

F. ASTM C 297 after aging by ASTM D 1037 Bond Tensile Strength.

G. ASTM D 635 Burn Extent.

H. ASTM D 1002 Bond Shear Strength

I. ASTM D 2244 Color Difference.

J. ASTME-E72 Beam Bending Strength.

K. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).

L. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014.

M. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2016).

N. NFRC 100 U Factor.

O. NFRC 700 U-Factor Certification.

P. NFRC Solar Heat Gain Coefficient .

Q. SWRI 1200°F Fire Resistance

R. UL 723 Flame Spread and Smoke Developed.

S. UL 972 Impact Strength.

1.5 PERFORMANCE REQUIREMENTS

A. System Design: Design and size components to withstand dead loads and live loads caused by snow, hail, and positive and negative wind loads acting on plane of panel without damage or permanent set.
   1. Design Wind Load: 40 lb/sq ft positive and negative.

B. Air leakage less than 0.01 cfm/ft² when tested by ASTM E 283 at 6.24 PSF.

C. No water penetration by ASTM E 331 at 15 PSF and structural testing by ASTM E 330 .

1.6 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of aluminum curtain wall..

1.7 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide component dimensions, describe components within assembly, panel configuration.

C. Samples: Submit two, 12 x 12 inch in size, illustrating prefinished aluminum surface, specified panel with skins, glazing materials illustrating edge and corner.

D. Installation Data: Special installation requirements.

E. Manufacturer's Qualification Statement.

1.8 QUALITY ASSURANCE

A. Perform work in accordance with AAMA CW-DG-1.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than ten (10) years of experience.
   1. Show evidence of those materials being satisfactorily used on at least six (6) projects of similar size, scope and location. At least three (3)of the projects shall have been in successful use for ten (10) years or longer.
   2. Panel system must be listed by an ANSI accredited Evaluation Service, which requires quality control inspections and fire, structural and water infiltration testing of sandwich panel systems by an accredited agency.
   3. Quality control inspections shall be conducted at least once each year and shall include manufacturing facilities, sandwich panel components and production sandwich panels for conformance with AC177 “Translucent Fiberglass Reinforced Plastic (FRP) Faced Panel Wall, Roof and Skylight Systems” as issued by the ICC-ES.

C. Installer Qualifications: Company specializing in performing the work of this section with at least five (5) years of documented experience.

1.9 REGULATORY REQUIREMENTS

A. Conform to applicable code for fire resistance ratings.

1.10 MOCK-UP

A. Provide one (1) mock-up, nine (9) feet long by four (4) feet wide, include translucent panels, intermediate mullion and window. Assemble to illustrate component assembly including glazing materials, weep drainage system, attachments, anchors, and perimeter sealant.

B. Locate where directed.

C. Mock-up may remain as part of the Work.

1.11 DELIVERY, STORAGE, AND HANDLING

A. Handle work of this section in accordance with AAMA CW-10.

B. Store panels on the long edge; several inches above the ground, blocked and under cover in accordance with manufacturer's storage and handling instructions.

C. Protect prefinished aluminum surfaces with wrapping; do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather.
   1. Puncture wrappings at ends for ventilation.

1.12 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Kalwall; 4" panel: www.kalwall.com..
   1. Kalwall Corporation, Tel: (800) 258-9777 – Fax: (603) 627-7905 – Email: info@kalwall.com.
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.2 PANEL COMPONENTS

A. Face Sheets
   1. Translucent faces: Manufactured from glass fiber reinforced thermoset resins, formulated specifically for architectural use.
      a. Thermoplastic (e.g. polycarbonate, acrylic) faces are not acceptable.
      b. Face sheets shall not deform, deflect or drip when subjected to fire or flame.
   2. Interior face sheets:
      a. Flame spread: Underwriters Laboratories (UL) listed, which requires periodic unannounced retesting, with flame spread rating no greater than 25 high impac tand smoke developed no greater than 250 when tested in accordance with UL 723.
      b. Burn extent by ASTM D 635 shall be no greater than 1”.
   3. Exterior face sheets:
      a. Color stability: Full thickness of the exterior face sheet shall not change color more than 3 CIE Units DELTA E by ASTM D 2244 after 5 years outdoor South Florida weathering at 5° facing south, determined by the average of at least three white samples with and without a protective film or coating to ensure long-term color stability. Color stability shall be unaffected by abrasion or scratching.
      b. Strength: Exterior and Interior face sheet shall be uniform in strength, impenetrable by hand held pencil and repel an impact minimum of 0.052 (Hi-Impact) ft. lbs. without fracture or tear when impacted by a 3-1/4” diameter, 5 lb. free-falling ball per UL 972.0.052 (Hi-Impact)
   4. Appearance:
      a. Exterior face sheets: Smooth 0.052 (Hi-Impact) thick and White in color.
      b. Interior face sheets: Smooth 0.052 (Hi-Impact) thick and White in color.
      c. Face sheets shall not vary more than ± 10% in thickness and be uniform in color.

B. Grid Core
   1. Thermally broken composite I-beam grid core shall be of 6005-T5 alloy and temper with provisions for mechanical interlocking of muntin-mullion and perimeter. Width of I-beam shall be no less than 7/16”.
   2. I-beam Thermal break: Minimum 2”, thermoset fiberglass composite.

C. Laminate Adhesive
   1. Heat and pressure resin type adhesive engineered for structural sandwich panel use, with minimum 25-years field use. Adhesive shall pass testing requirements specified by the International Code Council “Acceptance Criteria for Sandwich Panel Adhesives”.
   2. Minimum tensile strength of 750 PSI when the panel assembly is tested by ASTM C 297 after two exposures to six cycles each of the aging conditions prescribed by ASTM D 1037.

3. Minimum shear strength of the panel adhesive by ASTM D 1002 after exposure to four separate conditions:
   a. 50% Relative Humidity at 68° F: 540 PSI
   b. 182° F: 100 PSI
   c. Accelerated Aging by ASTM D 1037 at room temperature: 800 PSI
   d. Accelerated Aging by ASTM D 1037 at 182° F: 250 PSI

2.3 PANEL CONSTRUCTION

A. Provide sandwich panels of flat fiberglass reinforced translucent face sheets laminated to a grid core of mechanically interlocking I-beams. The adhesive bonding line shall be straight, cover the entire width of the I-beam and have a neat, sharp edge.
   1. Thickness: 4”
   2. Light transmission: 23%
   3. Grid pattern: Nominal size 12 x 24; Pattern:Shoji.

B. Standard panels shall deflect no more than 1.0” at 30 PSF in 10’ 0” span without a supporting frame by ASTM E 72.

C. Standard panels shall withstand 1200° F fire for minimum one hour without collapse or exterior flaming.

D. Thermally broken panels: Minimum Condensation Resistance Factor of 85 by AAMA 1503 measured on the bond line.

2.4 BATTENS AND PERIMETER CLOSURE SYSTEM

A. Closure system: Thermally broken extruded aluminum 6063-T6 and 6063-T5 alloy and temper clamp-tite screw type closure system.

B. Sealing tape: Manufacturer's standard, pre-applied to closure system at the factory under controlled conditions.

C. Fasteners: 300 series stainless steel screws for aluminum closures, excluding final fasteners to the building.

D. Finish:
   1. High Performance Organic Coating: Primer and silicone-modified polyester (SMP) enamel topcoat with minimum dry film thickness (DFT) of 1.2 mils, 0.0012 inch over aluminum extrusions and panels; AAMA 2604.
   2. Finish Color: Aluminum #79l

2.5 WINDOWS (2 ¾" DEEP)

A. Windows shall be designed specifically for inclusion in the translucent panel unit wall system and factory unitized to panels.
   1. Units shall be of the following type(s):
      a. Project-out bottom.

B. Performance: Windows shall pass or exceed requirements of AAMA/WDMA/CSA-101/I.S.2/A440-05.
   1. HC-2000 projected windows: PI-AW50, PO-HC55; shall pass requirements at 75 psf uniform structural load with air infiltration <.01 CFM/FT2 at 6.24 psf and no water penetration at 10 psf (PI) and 8 psf (PO)

C. Construction: All window frame members shall be of heavy gauge 6063-T5 extruded aluminum with a thermal break. Frame sections shall be coped and joined by stainless steel screws at each corner. All joints exposed to the weather shall be sealed with an elastic compound. All openings shall be double weather stripped using T-slot bulb gaskets to insure minimum air infiltration.
   1. Operating sash shall be hollow extruded design, mitered and joined with heavy reinforcing corners.

2. Both operable and fixed lites shall be inside glazed with an expanded EPDM closed cell sponge gasket to exterior, with aluminum glazing bead and a driven EPDM wedge gasket to the interior for rapid removal and replacement.

D. Hardware:
1. Hinges on operating windows shall be four bar stainless steel with adjustable friction blocks.
2. Locking hardware shall be of cam lever design and shall be made of cast white bronze.

E. Glazing:
1. Heavy commercial (HC2000) windows shall be glazed with 1" double insulated glass.
2. Glazing Specification:
a. Outboard Lite: Laminated Safety Glass, float glass.
a) Low-E Coating: Vitro Architectural Glass (formerly PPG Glass) Solarban 60 on #2 surface.
b) Tint: Clear.
c) Thickness: 1/4 inch minimum
b. Inboard Lite: Laminated Safety Glass,.
a) Tint: Clear.
b) Thickness: 1/4 inch minimum
c. Total Thickness: 1 inch.
d. Use for windows as indicated on drawings.
e. Substitutions: 01 6000 - Product Requirements.

F. Finish is to be coordinated with closure system.

2.6 FABRICATION

A. Fabricate system components with minimum clearances and shim spacing around perimeter of assembly, and ensure proper installation and dynamic movement of perimeter seals.

B. Accurately fit and secure joints and corners. Make joints flush and hairline.

2.7 FINISHES

A. High Performance Organic Coatings: AAMA 2604; multiple coats, thermally cured fluoropolymer system.

B. Color: Aluminum #79.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.

3.2 PREPARATION

A. Metal Protection:
1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
2. Where aluminum will contact concrete, masonry or pressure treated wood, protect against corrosion by painting contact surfaces with bituminous paint or method recommended

3.3 INSTALLATION

A. Install the panel system in accordance with the manufacturer's suggested installation recommendations and approved shop drawings.
1. Anchor component parts securely in place by permament mechanical attachment system.
2. Accommodate thermal and mechanical movements.
3. Set perimeter framing in a full bed of sealant compound, or with joint fillers or gaskets to provide weather-tight construction.

B. Install joint sealants at perimeter joints and within the panel system in accordance with manufacturer's installation instructions.

C. Install translucent panel system with cells vertical in accordance with manufacturer instructions.

D. Provide alignment attachments and shims to permanently fasten system to building structure.

E. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances and align with adjacent work.

F. Install sill flashings.

3.4 FIELD QUALITY CONTROL

A. Contractor shall provide the services of the manufacturer's field representative to observe installation and provide a written report.

1. Perform tests on three individual windows and panel sections in designated locations by theYPS Office of Facilities Management

B. Independent inspection will be provided under provisions of Section 01 4000 - Quality Requirements.

C. Replace components that have failed field testing and retest until performance is satisfactory.

3.5 ADJUSTING

3.6 CLEANING

A. Remove protective material from prefinished aluminum surfaces.

B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

3.7 PROTECTION

A. Protect finished work from damage until Date of Substantial Completion.

END OF SECTION

SECTION 09 2400
CEMENT PLASTERING

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. Cement plastering.

B. Removal existing plaster soffits

C. Repair/replace/patch existing portland cement plaster for installation over metal lath.

1.3 RELATED REQUIREMENTS

1.4 REFERENCE STANDARDS

A. ASTM C847 - Standard Specification for Metal Lath; 2018.

B. ASTM C91/C91M - Standard Specification for Masonry Cement; 2012.

C. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.

D. ASTM C206 - Standard Specification for Finishing Hydrated Lime; 2014.

E. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2018.

F. ASTM C897 - Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters; 2015.

G. ASTM C926 - Standard Specification for Application of Portland Cement-Based Plaster; 2018a.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittals procedures.

B. Product Data: Provide data on plaster materials and trim accessories.

C. Samples:

1. Submit _____ samples, 12 by 12 inch in size illustrating finish color and texture.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience.

1.7 MOCK-UP

A. Mock-Up Panel: Construct a 2 foot wide by 2 foot high sample panel of plaster work at the jobsite demonstrating installation procedures, finish texture, and color. Show each phase of installation including framing and reinforcement.

B. Construct mock-up of interior wall, two (2) feet long by two (2) feet wide, illustrating surface finish.

1. Locate where directed.
2. Mock-up may remain as part of this work.

1.8 FIELD CONDITIONS

A. Interior Plaster Work: Maintain minimum ambient temperature of 50 degrees F during installation of plaster and until fully cured.

PART 2 PRODUCTS

2.1 CEMENT PLASTER APPLICATIONS

A. Lath Plaster Base: Metal lath.
   1. Plaster Type: Factory prepared plaster mix.
   2. Number of Coats: Three.
   3. First Coat: Apply to a nominal thickness of 3/8 inch.
   4. Second Coat: Apply to a nominal thickness of 3/8 inch.
   5. Leveling Coat: Apply to a nominal thickness of 1/32 to 1/16 inch.
   6. Finish Coat: Apply to a nominal thickness of 1/8 inch.
      a. Texture: Smooth.

B. Solid Plaster Base: Concrete masonry.
   1. Plaster Type: Factory prepared plaster mix.
   2. Number of Coats: Three.
   3. First Coat: Apply to a nominal thickness of 1/4 inch.
   4. Second Coat: Apply to a nominal thickness of 1/4 inch.
   5. Leveling Coat: Apply to a nominal thickness of 1/32 to 1/16 inch.
   6. Finish Coat: Apply to a nominal thickness of 1/8 inch.

2.2 FACTORY PREPARED CEMENT PLASTER

A. Premixed Base Coats: Mixture of cement, aggregate, fibers, and proprietary admixtures for scratch and brown coats; install in accordance with ASTM C926.
   1. Manufacturers:
      a. The QUIKRETE Companies; QUIKRETE® Scratch and Brown Base Coat Stucco : www.quikrete.com.
      b. Substitutions: See Section 01 6000 - Product Requirements.

B. Premixed Finish Coating: Same product as base coat.

2.3 ACCESSORIES

A. Ribbed Metal Lath: ASTM C847, galvanized; 3/8 inch thick.
   1. Weight: 3.4 lb/sq yd.

B. Beads, Screeds, Joint Accessories, and Other Trim: Depth governed by plaster thickness, maximum possible lengths.
   1. Material: Formed sheet steel with rust inhibitive primer, expanded metal flanges.
   2. Corner Beads: Radiused corners.
   3. Expansion Joints: Accordion profile with factory-installed protective tape, 2 inch wide flanges.
   4. Control Joints: Accordion profile with protective tape, 2 inch flanges.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions are acceptable prior to starting this work.

B. Verify masonry joints are flush and surfaces are ready to receive work of this section, and that there are no existing bituminous or water repellent coatings on masonry surfaces.

C. Verify lath is flat, secured to substrate, and joint and surface perimeter accessories are properly in place.

D. Verify mechanical and electrical equipment and services located within areas to receive this work have been properly tested and approved.

3.2 PREPARATION

A. Dampen masonry surfaces to reduce excessive suction.

B. Clean concrete surfaces of foreign matter using approved acid solutions, solvents, or detergents, and then rinse surfaces thoroughly with clean water.

C. Roughen smooth concrete surfaces and apply bonding compound in accordance with manufacturer's written installation instructions.

D. Apply dash bond coat of plaster to solid bases and moist cure for at least 24 hours before applying first coat of jobsite mixed plaster.

3.3 Mixing

A. Mix only as much plaster as can be used prior to initial set.

B. Mix materials dry, to uniform color and consistency, before adding water.

C. Protect mixtures from frost or freezing temperatures, contamination, and excessive evaporation.

3.4 APPLICATION

A. Apply plaster in accordance with manufacturer's written instructions and comply with ASTM C926.

B. Base Coats:
   1. Apply base coat(s) to fully embed lath and to specified thickness.
   2. Follow guidelines in ASTM C926 and manufacturer's written installation instructions for moist curing base coats and application of subsequent coats.

C. Leveling Coat:
   1. Apply leveling coat to specified thickness.

D. Finish Coats:
   1. Cement Plaster:
      a. Apply with sufficient material and pressure to ensure complete coverage of base to specified thickness.
      b. Float to a consistent finish.

3.5 TOLERANCES

A. Maximum Variation from True Flatness: 1/4 inch in 10 feet.

3.6 REPAIR

A. Patching: Remove loose, damaged or defective plaster and replace with plaster of same composition; finish to match surrounding area.

END OF SECTION

SECTION 09 9113
EXTERIOR PAINTING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:

1. New and existing ferrous metal.
2. Exposed surfaces of steel lintels and ledge angles.
3. Existing metal doors and frames where indicated on drawings.
4. Existing brick.

1.3 RELATED REQUIREMENTS

A. Section 04 0110 - General Maintenance of Masonry for removal of paint from existing brick.

B. Section 05 5000 - Metal Fabrications: Shop-primed items.

C. Section 07 1800 - Traffic Coatings.

D. Section 09 2400 - Cement Plastering.

E. Section 09 9723 - Concrete and Masonry Coatings

1.4 DEFINITIONS

A. Comply with ASTM D16 for interpretation of terms used in this section.

1.5 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2016.

C. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; Current Edition.

D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

E. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

F. SSPC-SP 2 - Hand Tool Cleaning; 1982, with Editorial Revision (2004).

G. SSPC-SP 3 - Power Tool Cleaning; 1982, with Editorial Revision (2004).

H. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

1.6 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:

1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
2. MPI product number (e.g. MPI #47).

3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
4. Manufacturer's installation instructions.

C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
1. Where sheen is specified, submit samples in only that sheen.
2. Where sheen is not specified, discuss sheen options with YPS Office of Facilities Management before preparing samples, to eliminate sheens definitely not required.
3. Allow 15 days for approval process, after receipt of complete samples by Fuller and D'Angelo, P.C. .

D. Manufacturer's Instructions: Indicate special surface preparation procedures.

E. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

F. Maintenance Materials: Furnish the following for Yonkers Public Schools's use in maintenance of project.
1. See Section 01 6000 - Product Requirements, for additional provisions.
2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
3. Label each container with color in addition to the manufacturer's label.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum five (5) years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum three (3) years experience.

1.8 MOCK-UP

A. See Section 01 4000 - Quality Requirements, for general requirements for mock-up.

B. Provide column & beam assembly illustrating paint color, texture, and finish.

C. Locate where directed by Construction Manager.

D. Mock-up may remain as part of the work.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.10 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer.

B. Paints:
   1. Base Manufacturer: Sherwin-Williams Company; www.sherwin-williams.com.
   2. Dow Chemical Company; _____: consumer.dow.com/en-us/industry/ind-building-construction.html/#sle.

C. Substitutions: See Section 01 2500 - Substitution Procedures

2.2 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready mixed, unless required to be a field-catalyzed paint.
   1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.
   2. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
   4. Supply each paint material in quantity required to complete entire project's work from a single production run.
   5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:
   1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
      a. Architectural coatings VOC limits of State of New York.
   2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Colors: As selected by YPS Office of Facilities Management.

2.3 PAINT SYSTEMS - EXTERIOR

A. Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including galvanized and primed metal.

B. Existing Masonry (Brick) - Opaque, Alkyd, 3 Coat:
   1. One coat high perfromance acrylic Primer over existing brick.
      a. Sherwin Williams Loxon Primer & Sealer spreading rate recommended by manufacturer to achieve a dry film thickness of 2.1 to 3.2 mils.
      b. Sherwin WilliamsTwo coats Super Paint Exterior Satin spreading rate recommended by manufacturer to achieve a dry film thickness of 1.5 mils per coat.

C. Ferrous Metals, Unprimed, Latex, 3 Coat:
   1. Rust inhibiting, modified phenolic alkyd resin primer: 2 finish coats over primer
      a. Primer: Sherwin WilliamsKem Kromik Universal Metal Primer spreading rate recommended by manufacturer to achieve a dry film thickness of 3.3 to 4.4 mils.
   2. Topcoat: Acrylic Latex applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 2.1 to 4.2 mils
      a. Sherwin Williams: Pro Industrial Acrylic.

D. Ferrous Metals, Primed, Alkyd, 2 Coat:

1. Touch-up with rust-inhibitive primer recommended by top coat manufacturer.
2. Topcoat: Two Coats Alkyd applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 3.0 to 5.6mils
    a. Sherwin Williams: Direct To Metal Alkyd.

E. Galvanized Metals, Alkyd, 3 Coat:
1. One coat galvanize primer.
2. Two coats of alkyd enamel :
    a. Intermediate coat: Alkyd enamel applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 3.0 to 5.6.
        a) Sherwin Williams Direct To
    b. Finish coat: Alkyd enamel applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 3.0 to 5.6.
        a) Sherwin Williams Direct To Metal Alkyd Enamel Semi-Gloss Pure White

F. Gypsum Board/Plaster, Latex, 3 coat: (New Surfaces)
1. One Coat latex primer spreading rate recommended by manufacturer to achieve a dry film thickness of 4 mils wet and 1.3 mils dry.
    a. Sherwin Williams QUICK DRY Interior Exterior Stain Blocking Primer Latex
2. Topcoat: Two Coats of Acylic Latex spreading rate recommended by manufacturer to achieve a dry film thickness of 4 mils wet; 1.3 nils dry to 5.6 mils
    a. Sherwin Williams Loxoc XPP WAterproffing Masonry Coating

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been properly prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.

D. Test shop-applied primer for compatibility with subsequent cover materials.

3.2 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or repair existing paints or finishes that exhibit surface defects.

D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

G. Transite Panel: Refer to Section 02 80500 for preparation and application of the prime coat. Finish coats shall be applied as per manufacturer's instructions.

H. Galvanized Surfaces:
1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
2. Prepare surface according to SSPC-SP 2.

I. Ferrous Metal:
1. Solvent clean according to SSPC-SP 1.

2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
3. Remove rust, loose mill scale, and other foreign substances by power wire brushing, power sanding, power grinding, power tool chipping and power tool descaling, using methods recommended in writing by paint manufacturer and SSPC-SP 3. Protect from corrosion until coated.

3.3 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

C. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

D. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

E. Apply each coat to uniform appearance.

F. Sand metal surfaces lightly between coats to achieve required finish.

G. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

H. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.4 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection.

3.5 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.6 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

SECTION 22 1343
PACKAGED DUPLEX SUMP PUMP

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Packaged Duplex Sump Pump System.

B. Pumps.

C. Valves.

D. Pump and level control panel.

E. Instrumentation and controls.

1.2 RELATED REQUIREMENTS

A. Section 22 1005 - Plumbing Piping.

B. Section 31 2323 - Fill: Backfilling.

1.3 REFERENCE STANDARDS

A. AWWA C110/A21.10 - Ductile-Iron and Gray-Iron Fittings; 2012.

B. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service; 2009.

C. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service; 2015.

D. ISO 5199 - Technical specifications for centrifugal pumps -- Class II; 2002.

E. ISO 21940-11 - Mechanical vibration -- Rotor balancing -- Part 11: Procedures and tolerances for rotors with rigid behaviour; 2016.

F. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.

G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's technical literature for prefabricated assemblies and pump chamber and access way; include installation instructions.
   1. Control and power instrumentation and panels.
   2. Pump curves.
   3. Motor data.
   4. Specimen warranty.

C. Shop Drawings: Detailed drawings of entire pumping station, combining components furnished by different manufacturers, if any.
   1. Control panel schematic diagrams.

D. Operating and Maintenance Data:
   1. Submit preventative maintenance and inspection procedure for package lift stations.
   2. Include in procedures the frequency of preventative maintenance, inspection, adjustment, lubrication, and cleaning necessary to minimize corrective maintenance and repair.
   3. Submit spare parts data, including a complete list of parts and supplies with current unit prices and source of supply.

E. Maintenance Materials:
   1. One set of special tools that are required for maintenance and testing.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1.6 WARRANTY

A. Warranty: Provide manufacturer's warranty for packaged pump station, with itemized list of components covered by warranty; include list of specific operation and maintenance procedures that are required to keep warranty valid.

PART 2 PRODUCTS

2.1 PACKAGED DUPLEX SUMP PUMP SYSTEM

A. Manufacturers:
   1. Fderal Pump Corporation; Brooklyn, NY; VSP-2A-75-4.

B. Packaged Sump Pump System: Pre-engineered duplex pump station, including valves, internal piping, internal wiring, controls, and other necessary components for continuous, unattended, automatic operation.
   1. Furnish all components factory-assembled to greatest extent possible; where field installation is required, provide piping, wiring, and other components as required for a complete installation.
   2. Pumping Capacity: 50 gpm, minimum.
   3. Total Head: 10 feet.
   4. Finish all components in accordance with manufacturer's standard practice for sewage resistance.

C. Pump Lifting Assembly: Factory-assembled, mounted in wet well, designed to allow each pump to be independently raised to ground level for maintenance and returned to position without entering wet well; vertical rails, pump support assembly sliding on rails, integral guide bracket on pump, pump quick disconnect with hydraulic sealing flange, discharge pipe supports, and lifting chain; all metal parts stainless steel or bronze.

D. Anchors and Fasteners: Stainless steel.

E. Identification: For each item of equipment, provide the manufacturer's name or trademark and model number on corrosion-resistant identification plate, cast integrally, stamped, or otherwise permanently marked in conspicuous place; for pumps, include pump capacity in gpm and Lpm, pump head in feet and meters, speed of rotation, and direction of rotation.

2.2 PUMPS

A. Pump Construction:
   1. Body: Cast iron, designed to permit easy replacement of parts; internal passageways permitting smooth flow of sewage and free from sharp turns and projections; cleanout plates in suction line and drain plugs; all joints gasketed.
   2. Impellers: Cast iron, cast steel, or other alloy suitable for sewage service; free flowing, with necessary clearance to permit objects in sewage to pass; keyed, splined, or threaded onto shaft and locked in such manner that lateral movement is prevented and reverse rotation cannot cause loosening.
   3. Shafts: High-grade steel, of size and strength required.
   4. Balance: Balance rotating parts mechanically and hydraulically to operate throughout required range without excessive end thrust, vibration, and noise; vibration not to exceed that specified in ISO 21940-11, Table 1; pumps dependent upon hydraulic balance are prohibited.
   5. Bearings: Ball thrust bearings or roller type bearings of adequate size to withstand imposed loads; grease lubricated.

2.3 VALVES

A. Valves: Provide one gate valve and one check valve on each pump discharge line.

B. Gate Valves:
   1. Type: Outside-screw-and-yoke rising-stem type with flanged connections; AWWA C500 with double disc gates, or AWWA C509.
   2. Provide valves with hand wheels that open by counterclockwise rotation.

3. Provide with stuffing boxes that permit easy removal of parts for repair.
4. Use valves from only one manufacturer.

C. Check Valves:
1. Rated Working Pressure: 175 psi.
2. Sizes Less Than 4 inch: Neoprene ball check valve with integral hydraulic sealing flange.

2.4 PIPING

A. Inlet and Outlet Piping: Same type of pipe and jointing as specified for sanitary sewer to which pump station will be connected.

B. Outlet Piping: See Section 22 1005.

C. Accessories: Provide fittings, flanges, connecting pieces, transition glands, transition sleeves, and other adapters as required.

D. Pit Cover: Provide steel cover plate of guage required to support equipment. Provide access viewport, vent and required equipment and piping portals.

2.5 PUMP AND LEVEL CONTROL PANEL

A. Control Panel:
1. Factory sized, wired, and tested assembly within NEMA 250 Type 4X hinged door enclosure.
2. Hand-Off-Auto selectable switch with illuminated green start and red stop switches.
3. Adjustable on delay and off delay pump relays tied to pump starter interface contacts.
4. Identification Plate:
a. Engraved plate to show uppercase white letters on black background.
b. 1st Line: PUMP AND LEVEL CONTROL PANEL.
c. 2nd Line: System Voltage (e.g. 208V, 3PH or 480V, 3PH) listing power source.

B. Control Panel Interface:
1. Provide control-panel mounted pump starter.

2.6 INSTRUMENTATION AND CONTROLS

A. Automatic Controls: Provide automatic controls for pump and other equipment operation, with local manual controls.
1. Provide manual controls as indicated.
2. Provide remote indication corresponding to all local indication.
3. Provide remote controls corresponding to all manual controls.

B. Pump Controls: Provide controls capable of operating pumps either simultaneously or individually, depending on load conditions.
1. Pump Actuators: Two float-operated water level switches, one float set at low-water level and one at high-water level.
2. When low-water level is exceeded, start the Lead pump.
3. Each time low-water level is reached, set the other pump as Lead.
4. Operate both pumps if water level rises above high-water level.
5. Prevent both pumps from starting at the same time.
6. Stop both pumps when low-water level is reached.
7. Provide Hand-Off-Auto switches for each pump.
8. Include alarm to warn of failure of pumps.

C. Emergency High Level Alarm: Float-operated water level switch independent of pump control; set at emergency high-water level; activating alarm indicators.

D. Electronic Pump Controllers: Mount in starter panel enclosure, visible with enclosure door opened in front of swing-out panel.

2.7 POWER

A. Electrical Power Available: 120 volts AC, single phase, 60 Hz.Coordinate with electrical contractor for power wiring characteristics and connections.

2.8 SOURCE QUALITY CONTROL

A. Test pump, valve, and piping assembly in factory prior to shipping, at test pressure equal to 50 percent more than pump discharge pressure or total dynamic head, whichever is greater.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify inlet and discharge piping connection match size, location, and elevation shown on drawings.

3.2 INSTALLATION

A. Install as indicated, in accordance with drawings and manufacturer's instructions.

B. Where equipment is mounted on concrete pit, grout attachments before connecting piping.

C. Set water level controls at elevations indicated; if not indicated, obtained Yonkers Public Schools's instructions as to levels.

D. Install on or near pump station, complete package of posted instructions, consisting of labels, signs, and operating instructions.

3.3 MANUFACTURER FIELD SERVICES

A. Provide the services of equipment manufacturer's technical representative to direct startup of station and instruct Yonkers Public Schools's personnel in startup, operation, and maintenance procedures.

3.4 FIELD QUALITY CONTROL

A. After installation but before backfilling or connecting to sewer piping, test pump, valve, and piping assemblies under test pressure equal to 50 percent more than pump discharge pressure or total dynamic head, whichever is greater, using clean water. Backfill in accordance with Section 31 2323.

1. Simulate varying water level conditions to show that pump controls are working properly.
2. Activate each control function to check for proper operation and indication.
3. Include alarm conditions to show that alarms are correctly connected and functioning.

END OF SECTION

SECTION 26 0519
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Single conductor building wire.

B. Metal-clad cable.

C. Wiring connectors.

D. Electrical tape.

E. Wire pulling lubricant.

F. Cable ties.

1.2 RELATED REQUIREMENTS

A. Section 07 8400 - Firestopping.

1.3 REFERENCE STANDARDS

A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013 (Reapproved 2018).

B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2011 (Reapproved 2017).

C. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape; 2017.

D. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

E. NECA 120 - Standard for Installing Armored Cable (AC) and Metal-Clad Cable (MC); 2012.

F. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; 2009.

G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

H. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.

I. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.

J. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.

K. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.

L. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.

M. UL 1569 - Metal-Clad Cables; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
3. Notify Fuller and D'Angelo, P.C. of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.

1.6 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.1 CONDUCTOR AND CABLE APPLICATIONS

A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.

B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.

C. Nonmetallic-sheathed cable is not permitted.

D. Metal-clad cable is permitted only as follows:

1. Where not otherwise restricted, may be used:
    a. Where concealed in hollow stud walls and above accessible ceilings for branch circuits up to 20 A.

2.2 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

A. Provide products that comply with requirements of NFPA 70.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.

D. Comply with NEMA WC 70.

E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.

F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.

G. Conductor Material:

1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B 787M unless otherwise indicated.

H. Conductor Color Coding:

1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
2. Color Coding Method: Integrally colored insulation.
3. Color Code:
    a. Equipment Ground, All Systems: Green.

2.3 SINGLE CONDUCTOR BUILDING WIRE

A. Description: Single conductor insulated wire.

B. Conductor Stranding:

1. Feeders and Branch Circuits:
    a. Size 10 AWG and Smaller: Solid.
    b. Size 8 AWG and Larger: Stranded.

C. Insulation Voltage Rating: 600 V.

D. Insulation:

1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.

2.4 METAL-CLAD CABLE

A. Description: NFPA 70, Type MC cable listed and labeled as complying with UL 1569, and listed for use in classified firestop systems to be used.

B. Conductor Stranding:
   1. Size 10 AWG and Smaller: Solid.
   2. Size 8 AWG and Larger: Stranded.

C. Insulation Voltage Rating: 600 V.

D. Insulation: Type THHN, THHN/THWN, or THHN/THWN-2.

E. Grounding: Full-size integral equipment grounding conductor.

F. Armor: Steel, interlocked tape.

2.5 WIRING CONNECTORS

A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

2.6 WIRING ACCESSORIES

A. Electrical Tape:
   1. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F and suitable for continuous temperature environment up to 221 degrees F.

B. Wire Pulling Lubricant: Listed; suitable for use with the conductors or cables to be installed and suitable for use at the installation temperature.

C. Cable Ties: Material and tensile strength rating suitable for application.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that work likely to damage wire and cable has been completed.

B. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.

C. Verify that field measurements are as shown on the drawings.

D. Verify that conditions are satisfactory for installation prior to starting work.

3.2 PREPARATION

A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.3 INSTALLATION

A. Circuiting Requirements:
   1. Unless dimensioned, circuit routing indicated is diagrammatic.
   2. When circuit destination is indicated and routing is not shown, determine exact routing required.

B. Install products in accordance with manufacturer's instructions.

C. Install conductors and cable in a neat and workmanlike manner in accordance with NECA 1.

D. Install metal-clad cable (Type MC) in accordance with NECA 120.

E. Installation in Raceway:
   1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
   2. Pull all conductors and cables together into raceway at same time.
   3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.

4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.

F. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.

G. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.

H. Terminate cables using suitable fittings.
1. Metal-Clad Cable (Type MC):
a. Use listed fittings.
b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.

I. Install conductors with a minimum of 12 inches of slack at each outlet.

J. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.

K. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.

L. Make wiring connections using specified wiring connectors.
1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
3. Do not remove conductor strands to facilitate insertion into connector.
4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.

M. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.

N. Insulate ends of spare conductors using vinyl insulating electrical tape.

O. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.

P. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

END OF SECTION

SECTION 26 0526
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Grounding and bonding requirements.

B. Conductors for grounding and bonding.

C. Connectors for grounding and bonding.

1.2 RELATED REQUIREMENTS

A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.

B. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS

A. IEEE 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System; 2012.

B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

D. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.4 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.1 GROUNDING AND BONDING REQUIREMENTS

A. Do not use products for applications other than as permitted by NFPA 70 and product listing.

B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.

C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

D. Grounding System Resistance:

1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Fuller and D'Angelo, P.C. . Precipitation within the previous 48 hours does not constitute normally dry conditions.
2. Grounding Electrode System: Not greater than 5 ohms to ground, when tested according to IEEE 81 using "fall-of-potential" method.

2.2 GROUNDING AND BONDING COMPONENTS

A. General Requirements:

1. Provide products listed, classified, and labeled as suitable for the purpose intended.
2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 26 0526:

1. Use insulated copper conductors unless otherwise indicated.
    a. Exceptions:
        a) Use bare copper conductors where installed underground in direct contact with earth.
        b) Use bare copper conductors where directly encased in concrete (not in raceway).

C. Connectors for Grounding and Bonding:

1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
2. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that work likely to damage grounding and bonding system components has been completed.

B. Verify that field measurements are as indicated.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Make grounding and bonding connections using specified connectors.
1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

D. Identify grounding and bonding system components in accordance with Section 26 0553.

END OF SECTION

SECTION 26 0533.16
BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Outlet and device boxes up to 100 cubic inches, including those used as junction and pull boxes.

B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches.

1.2 RELATED REQUIREMENTS

A. Section 26 0529 - Hangers and Supports for Electrical Systems.

B. Section 26 0534 - Conduit:
   1. Conduit bodies and other fittings.

C. Section 26 0535 - Surface Raceways:
   1. Accessory boxes designed specifically for surface raceway systems.

1.3 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2010.

C. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; 2013.

D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

E. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.

1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for junction and pull boxes.

1.5 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.1 BOXES

A. General Requirements:
   1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
   2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
   3. Provide products listed, classified, and labeled as suitable for the purpose intended.
   4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
   5. Provide grounding terminals within boxes where equipment grounding conductors terminate.

B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
   1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
   2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
   3. Use suitable concrete type boxes where flush-mounted in concrete.
   4. Use suitable masonry type boxes where flush-mounted in masonry walls.
   5. Use raised covers suitable for the type of wall construction and device configuration where required.
   6. Use shallow boxes where required by the type of wall construction.

7. Do not use "through-wall" boxes designed for access from both sides of wall.
8. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive boxes.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Box Supports:
1. Secure and support boxes in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.

E. Install boxes plumb and level.

F. Install boxes as required to preserve insulation integrity.

G. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.

H. Close unused box openings.

I. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.

J. Provide grounding and bonding in accordance with Section 26 0526.

3.3 CLEANING

A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

3.4 PROTECTION

A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

END OF SECTION

SECTION 26 0535
SURFACE RACEWAYS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Surface raceway systems.

1.2 RELATED REQUIREMENTS

A. Section 26 0526 - Grounding and Bonding for Electrical Systems.

B. Section 26 0529 - Hangers and Supports for Electrical Systems.

C. Section 26 0534 - Conduit.

D. Section 26 0533.16 - Boxes for Electrical Systems.

1.3 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

C. UL 5 - Surface Metal Raceways and Fittings; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the placement of raceways with millwork, furniture, equipment, etc. installed under other sections or by others.
2. Coordinate rough-in locations of outlet boxes provided under Section 26 0533.16 and conduit provided under Section 26 0534 as required for installation of raceways provided under this section.
3. Verify minimum sizes of raceways with the actual conductors and components to be installed.
4. Notify Fuller and D'Angelo, P.C. of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

B. Sequencing:

1. Do not install raceways until final surface finishes and painting are complete.
2. Do not begin installation of conductors and cables until installation of raceways is complete between outlet, junction and splicing points.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets including dimensions, knockout sizes and locations, materials, fabrication details, finishes, service condition requirements, and accessories.

1. Surface Raceway Systems: Include information on fill capacities for conductors and cables.

1.6 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS

2.1 RACEWAY REQUIREMENTS

A. Provide Surface Raceway in all locations exposed within finished spaces.

B. Provide all components, fittings, supports, and accessories required for a complete raceway system.

C. Provide products listed, classified, and labeled as suitable for the purpose intended.

D. Do not use raceways for applications other than as permitted by NFPA 70 and product listing.

2.2 SURFACE RACEWAY SYSTEMS

A. Manufacturers:
   1. Wiremold, a brand of Legrand North America, Inc: www.legrand.us/#sle.

B. Surface Metal Raceways: Listed and labeled as complying with UL 5.

C. Surface Raceway System:
   1. Raceway Type: Single channel, painted steel.
   2. Length: As indicated on the drawings.
   3. Color: To be selected by Architect.
   4. Accessory Device Boxes: Suitable for the devices to be installed; color to match raceway.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that outlet boxes and conduit terminations are installed in proper locations and are properly sized in accordance with NFPA 70 to accommodate raceways.

C. Verify that mounting surfaces are ready to receive raceways and that final surface finishes are complete, including painting.

D. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install raceways in a neat and workmanlike manner in accordance with NECA 1.

C. Install raceways plumb and level.

D. Secure and support raceways in accordance with Section 26 0529 at intervals complying with NFPA 70 and manufacturer's requirements.

E. Close unused raceway openings.

F. Provide grounding and bonding in accordance with Section 26 0526.

3.3 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

B. Inspect raceways for damage and defects.

C. Correct wiring deficiencies and replace damaged or defective raceways.

3.4 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.5 PROTECTION

A. Protect installed raceways from subsequent construction operations.

END OF SECTION

SECTION 28 3100
MODIFICATIONS TO EXISTING FIRE DETECTION AND ALARM SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Modifications to existing fire alarm system components and wiring indicated.

1.2 RELATED REQUIREMENTS

A. Section 07 8400 - Firestopping: Materials and methods for work to be performed by this installer.

B. Section 26 0535 - Surface Raceways

1.3 REFERENCE STANDARDS

A. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

B. NFPA 72 - National Fire Alarm and Signaling Code; 2016.

1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Evidence of installer qualifications and manufacturer's certification.

C. Inspection and Test Reports:
   1. Submit documentation of satisfactory inspections and tests.
   2. Submit NFPA 72 "Inspection and Test Form," filled out.

D. Closeout Documents:
   1. Certification by manufacturer that the system has been installed in compliance with his installation requirements, is complete, and is in satisfactory operating condition.
   2. NFPA 72 "Record of Completion", filled out completely and signed by installer and authorized representative of authority having jurisdiction.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Firm with minimum 3 years documented experience installing fire alarm systems of the specified type and providing contract maintenance service as a regular part of their business.
   1. Authorized representative of control unit manufacturer; submit manufacturer's certification that installer is authorized; include name and title of manufacturer's representative making certification.
   2. Installer Personnel: At least 2 years of experience installing fire alarm systems.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Fire Alarm Control Units and Accessories - Provide componenets certified by the existing system manufacturer for use in the installed system.

2.2 EXISTING COMPONENTS

A. Existing Fire Alarm System: Remove and relocate existing components indicated and incorporate remaining components into new system, under warranty as if they were new; do not take existing portions of system out of service until new portions are fully operational, tested, and connected to existing system.

B. Provide componenets compatible with existing system,

C. Provide any additional interface modules or expansion modules required to connect new devices to existing system.

2.3 COMPONENTS

A. Connected Devices Devices:
   1. Addressable Systems:
      a. Addressable Devices: Individually identifiable by addressable fire alarm control unit.

b. Provide suitable addressable interface modules as indicated or as required for connection to existing system controller.

c. Verify system operating voltage.

2. Magnetic Door Hold-Open: Rixson FM996

B. Circuit Conductors: Copper; provide 200 feet extra; color code and label.

C. Instruction Charts: Printed instruction chart for operators, showing steps to be taken when a signal is received (normal, alarm, supervisory, and trouble); easily readable from normal operator's station.

1. Frame: Stainless steel or aluminum with polycarbonate or glass cover.
2. Provide one for each control unit where operations are to be performed.
3. Obtain approval of Yonkers Public Schools prior to mounting; mount in location acceptable to Yonkers Public Schools.
4. Provide extra copy with operation and maintenance data submittal.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with applicable codes, NFPA 72, NFPA 70, and the contract documents.

B. Conceal all wiring, conduit, boxes, and supports where installed in finished areas.

C. Any exposed wiring in finished spaces shall be in surface raceway, See spec section 26 0535

D. Install in accordance with manufacturer's requirements to maintain existing system warranties and certifications.

E. Mount back boxes securely to walls with expansion anchors or threaded masony anchors. Plastic insert anchors are not acceptable. .

3.2 INSPECTION AND TESTING FOR COMPLETION

A. Provide the services of the installer's supervisor or person with equivalent qualifications to supervise inspection and testing, correction, and adjustments.

B. Prepare for testing by ensuring that all work is complete and correct; perform preliminary tests as required.

C. Provide all tools, software, and supplies required to accomplish inspection and testing.

D. Perform inspection and testing in accordance with NFPA 72 and requirements of local authorities; document each inspection and test.

E. Correct defective work, adjust for proper operation, and retest until entire system complies with contract documents.

END OF SECTION

SECTION 31 2316
EXCAVATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. Excavating, trenching, and backfilling for site structures, concrete sidewalks, and site utilities.

B. Select fill.

C. Final grading

1.3 RELATED REQUIREMENTS

A. Section 32 1313 - Concrete Paving.

B. Refer to Appendix for Geo-Tech Report and Borings.

1.4 REFERENCE STANDARDS

A. All references apply to the latest revisions of the publications.

B. ASTM D422: Particle Size Analysis of Soils

C. ASTM D1556: Density and Unit Weight of Soil in Place by the Sand-Cone Method

D. ASTM D1557: Laboratory Compaction Characteristics of Soil Using Modified Effort

E. ASTM D2922: Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth)

F. ASTM D2974: Moisture, Ash and Organic Matter of Peat and other Organic Soils

G. ASTM D3017: Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

H. ASTM D4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits)

I. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

1.5 MATERIAL EVALUATION/QUALITY CONTROL

A. Subsurface Data.

1. The results of available subsurface investigations are appended to these Specifications. The data is shown for general information only. No warranty, either expressed or implied, is made as to the accuracy of the subsurface information presented.

1.6 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Temporary Support and Excavation Protection Plan.

C. Project Record Documents: Record drawings at project closeout according to Section 01 7800 - Closeout Submittals. Show locations of installed support materials left in place, including referenced locations and depths, on drawings.

D. Pre excavation Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by earthwork operations. Submit before earthwork begins.

1.7 DEFINITIONS

A. Excavation shall mean the excavation, removal, stockpiling, and/or satisfactory disposal of all materials encountered within the limits indicated or specified other than rock or ledge. Excavated materials shall include, but not be limited to removal of material encountered above subgrade elevations indicated, earth

materials such as peat, organic or inorganic silts, clay, sand, gravel, pavements, cobble and boulders less than 1.0 cubic yard in volume, soft or disintegrated rock which, in the opinion of the Geotech Engineer, can be removed without blasting or drilling; pavement, brick and concrete masonry, and all obstructions not specifically included in another Section.

B. Excavation: and subsequent disposal of materials removed.

C. Unauthorized Excavation: Removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Owner's Representative. Unauthorized excavation and remedial work directed by Owner's Representative shall be at Contractor's expense.
   1. Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position when acceptable to Geotech Engineer.
   2. In locations other than those above, backfill and compact unauthorized excavations as specified for authorized excavations of same classification unless otherwise directed by Owner's Representative, Geotech Engineer, and Construction Manager.

D. Authorized Additional Excavation: If the Owner's Representative, Geotech Engineer, and Construction Manager determines bearing materials at required subgrade elevations are unsuitable, continue excavation until suitable bearing materials are encountered. Replace excavated material as directed by Owner's Representative, Geotech Engineer, and Construction Manager.
   1. Removal of unsuitable material and replacement as directed will be paid on basis of conditions of contract relative to Allowances listed in changes in the work.

E. Backfill: Soil material or controlled low-strength material used to fill an excavation.
   1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
   2. Final Backfill: Backfill placed over initial backfill to fill a trench.

F. Fill: Soil materials used to raise existing grades.

G. Drainage Fill: Layer supporting slab-on-grade, concrete pavement, stairs, ramps, footings, and retaining walls used to minimize capillary flow of pore water.

H. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.

I. Borrow: Satisfactory soil imported from off-site for use as fill or backfill.

J. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below select fill, drainage fill, and topsoil materials.

K. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.8 PROJECT CONDITIONS

A. Verify existing grades and notify Architect of differing conditions.

PART 2 PRODUCTS -

2.1 SOIL MATERIALS

A. Excavations General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: ASTM D 2487 soil classification groups GW, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: ASTM D 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, and PT or a combination of these group symbols.
   1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

2. Materials containing excessive amounts of water, plastic clay, vegetation, organic matter, debris, pavement, stones or boulders over 3 inches in greatest dimension, frozen material, and material which, in the opinion of the Geotechnical Engineer will not provide a suitable foundation or subgrade.

D. General Fill Material: Soil materials free of clay, rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

1. **Not to be used against basement or retaining wall**.

E. Drainage Fill: ASTM C-33 Blend 57, a blend of NYSDOT No. 1 and No. 2 crushed stone that complies with material specification requirements of Article 703-02 for crushed stone and the following limits of gradation:

% Passing By Weight	Sieve Size
100%	1" sieve.
40-50%	3/4"
25-60%	passing a 1/2" sieve.
10-30%	passing a 3/8" sieve
0-10%	passing a # 4 sieve.
0-5%	passing a # 8 sieve

1. Location: Under slabs on grade, sidewalks, ramps, concrete stairs, footings, piers, and retaining walls.

100%	passing a 1" sieve.
30-100%	passing a 1/2" sieve.
0-30%	passing a 1/4" sieve
0-10%	passing a #10 sieve.
0-5%	passing a #20 sieve.

F. Topsoil : Friable loam; local borrow.

1. Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots; minimum pH value of 5.4 and maximum 7.0.
2. Graded.
3. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.
4. Furnish a certified analysis, made by a recognized authority, of any topsoil furnished to complete the work of planting. Test reports shall match the format listed below:

Passing	Retained Percentage	
l" screen	l00%	
l" screen	1/4" screen (gravel)	Not more than 3%
l/4" screen	No. l00 (sand)	40% - 60%
No. l00(Very fine sand, silt and clay)	40% - 60%	

PART 3 EXECUTION

3.1 TOPSOIL STRIPPING AND STOCKPILING

A. Stripping and Stockpiling of Topsoil: Strip topsoil from areas to be excavated or filled, areas within proposed building limits and paving areas and stockpile where shown on the plans. Stockpiled topsoil shall be free of subsoil, stones, clods of hard earth, plants or their roots, sticks or other matter not conducive to plant growth. Stockpiling shall be coordinated by the Contractor and shall comply with the requirements of Section .

3.2 EXAMINATION

A. Verify that survey bench mark and intended elevations for the work are as indicated.

3.3 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. Locate, identify, and protect utilities that remain and protect from damage.

C. Protect existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

D. Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by Fuller and D'Angelo, P.C. .

E. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

F. Provide protective insulating materials to protect subgrades and foundation soils against freezing temperatures or frost.

G. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

H. Protect and maintain erosion and sedimentation controls, which are specified in Section Site Clearing" during earthwork operations.

3.4 TEMPORARY EXCAVATION SUPPORT AND PROTECTION

A. Excavation Safety: Comply with OSHA's Excavation Standard, 29 CFR 1926, Subpart P.

1. Excavations in stable rock or in less than 5 feet in depth in ground judged as having no cave-in potential do not require excavation support and protection systems.

3.5 EXCAVATING GENERAL

A. Underpin adjacent structures that could be damaged by excavating work.

B. Excavate to accommodate new structures and construction operations.

1. Excavate to the specified elevations.
2. Excavate to the length and width required to safely install, adjust, and remove any forms, bracing, or supports necessary for the installation of the work.
3. Cut utility trenches wide enough to allow inspection of installed utilities.
4. Hand trim excavations. Remove loose matter.
5. Slope banks of excavations deeper than 4 feet (1.2 meters) to angle of repose or less until shored.

C. Notify Owner's Representative of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

D. Do not interfere with 45 degree bearing splay of foundations.

E. Provide temporary means and methods, as required, to remove all water from excavations until directed by Owner's Representative. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control.

F. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.

G. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.

3.6 FILLING AND BACKFILLING

A. Do not fill or backfill until all debris, water, unsatisfactory soil materials, obstructions, and deleterious materials have been removed from excavation.

B. Install underground warning tape at buried utilities according to Section 22 0553, 23 0553, and 26 0553..

3.7 REPAIR

A. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 2323.

3.8 STABILITY OF EXCAVATIONS

A. Slope sides of excavations to comply with local codes, ordinances, and requirements of agencies having jurisdiction. Shore and brace, where sloping is not possible because of space restrictions or stability of material excavated, to comply with local codes, ordinances, and requirements of agencies having jurisdiction. Maintain sides and slopes of excavations in safe condition until completion of backfilling.

3.9 EXCAVATION FOR WALKS AND PAVEMENTS

A. See Section 32 1313 - Concrete Paving for excavation and backfilling requirements. Construct to indicated cross sections, elevations, and grades.

B. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades

3.10 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches (300 mm) higher than top of pipe or conduit, unless otherwise indicated.

1. Clearance: 12 inches on each side of pipe or conduit.
2. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
3. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe elevation to allow for bedding course. Hand excavate for bell of pipe.
    a. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
    b. Bed pipe in bedding and backfill material as described in Part 2, including 6 inches below pipe to 12 inches above pipe. Material shall be thoroughly compacted.
    c. The balance of the trench shall be filled with bedding or backfill material placed in 12 inch maximum lifts thoroughly compacted to subgrade for crushed stone drainage layer or to subgrade for pavement stone base as applicable.

3.11 STORAGE OF SOIL MATERIALS

A. Stockpile borrows material and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.
2. Provide tarp or erosion control fabric on stockpile material and a silt fence around stockpiled material.
3. Material stockpiled outside the contract area shall be in locations approved by the Owner. If areas are not available store material off site at contractor's expense.

3.12 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Inspecting and testing underground utilities.
2. Removing trash and debris.
3. Removing temporary shoring, bracing, and sheeting.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.13 UTILITY TRENCH BACKFILL

A. Place backfill on subgrades free of mud, frost, snow, or ice.

B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

C. Place and compact initial backfill of subbase material, free of particles larger than 1 inch , to a height of 12 inches over the utility pipe or conduit.

1. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.

D. Place and compact final backfill of satisfactory soil to final subgrade elevation.

3.14 FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:
1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material and drainage fill.
3. Under steps and ramps, use select fill and drainage fill.
4. Under building footings, foundations and slabs on grade, use select fill and drainage fill.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.15 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.16 COMPACTION OF BACKFILLS AND FILLS

A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:
1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill material at 98 percent.
2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 98 percent.
3. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 90 percent.

3.17 GRADING

A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

3.18 CLEANING

A. Stockpile excavated material to be re-used in area designated on site in accordance with Section 31 2200.

B. Remove excavated material that is unsuitable for re-use from site.

C. Remove excess excavated material from site.

3.19 PROTECTION

A. Divert surface flow from rains or water discharges from the excavation.

B. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.

C. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition.

D. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

E. Keep excavations free of standing water and completely free of water during concrete placement.

F. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

G. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

H. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

I. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.20 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove all surplus soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION

SECTION 32 1313
CONCRETE PAVING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.

B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

A. Concrete sidewalks.

B. Concrete Admixtures.

C. Miscellaneous site concrete.

1.3 RELATED REQUIREMENTS

A. Section 07 9200 - Joint Sealants: Sealing joints.

B. Section 31 2316 - Excavation: Preparation of site for base and preparation of subsoil.

1.4 REFERENCE STANDARDS

A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).

B. ACI 301 - Specifications for Structural Concrete; 2016.

C. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).

D. ACI 305R - Guide to Hot Weather Concreting; 2010.

E. ACI 306R - Guide to Cold Weather Concreting; 2016.

F. ACI 308 - Standard Specification for Curing Concrete

G. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2018, with Editorial Revision (2018).

H. ASTM A 820 / A 820M - Standard Specification for Steel Fibers for Fiber-Reinforced Concrete

I. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2016, with Editorial Revision (2016).

J. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2018.

K. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2018.

L. ASTM C 138 / C 138 M - Standard Test for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.

M. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.

N. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).

O. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2017.

P. ASTM C 989 - Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars

Q. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2018.

R. ASTM D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction; 2018.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on joint filler, admixtures, and curing compound.

C. Design Data: Indicate pavement thickness, designed concrete strength, reinforcement, and typical details.

1.6 QUALITY ASSURANCE

A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant and each aggregate from one source.

B. Installer Qualifications: An experienced installer, with a minimum of 5 years experience, who has completed pavement work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Conform to provisions of the Section 01 6000 - Product Requirements and the Hydrophobic Concrete Admixture Manufacturer instructions.

B. Mixing and Delivery: Conform to ASTM C94.

C. Sampling at Delivery: Conform to ASTM C172. Cure 4-inch by 8-inch cylinders to provisions of ASTM C31 and compression test compressive strength of cylinders to ASTM C39. Store samples, coordinate with Owner's representative for turnover to testing agency

D. Batch Tickets: Conform to ASTM C94 Option A or C. Accompany each load, fully executed, and signed. Log in with inspector at time of entry. Conform to Source Quality Control requirements specified by this Section.

1. Include water content and water withheld at batch plant.
2. Indicate time to nearest minute that batch was dispatched from plant, when it arrived at site, and when unloading began and was finished.
3. Indicate ambient air temperature and concrete internal temperature at time of arrival.
4. Make written record of water and other additives added to design mix, and the amount of concrete in the truck at the time of addition, after the mix truck left the batch plant.

E. Reject concrete that has reached internal temperature of 89 degrees Fahrenheit or above and when temperature has risen 5 degrees in 10 minutes, indicating concrete is setting up prior to discharge.

PART 2 PRODUCTS

2.1 PAVING ASSEMBLIES

A. Comply with applicable requirements of ACI 301.

B. Sidewalks and PAvements: 4,000 psi 28 day concrete, 5 inches thick, 6 by 6 - W2.9 by W2.9 mesh reinforcement. Light broom finish.

2.2 FORM MATERIALS

A. Wood form material, profiled to suit conditions.

B. Joint Filler: Preformed; non-extruding bituminous type (ASTM D1751) or sponge rubber or cork (ASTM D1752).

1. Thickness: 1/2 inch.

2.3 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M, Grade 80 (80,000 psi) yield strength; deformed billet steel bars; epoxy coated.

B. Steel Welded Wire Reinforcement: Plain type, ASTM A1064/A1064M; in flat sheets; epoxy coated.

C. Dowels: ASTM A615/A615M, Grade 40 - 40,000 psi yield strength; deformed billet steel bars; epoxy coated finish.

D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcement bars, welded wire fabric, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete.

2.4 CONCRETE MATERIALS

A. Cement: ASTM C150/C150M, Normal - Type I Portland cement, gray color.

B. Fine and Coarse Mix Aggregates: ASTM C33/C33M.

C. Water: Clean, and not detrimental to concrete.

D. Air-Entraining Admixtures: ASTM C260/C260M.

2.5 ACCESSORIES

A. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

B. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
   1. Material: Closed-cell, non-absorbent, compressible polymer foam in sheet form.
   2. Manufacturers:
      a. Expansion Joint Cap Strip: Extruded, plastic, removable strip made specifically for forming recessed joint. Vinylex, Knoxville, TN 37921 (615) 690-2211
      b. Substitutions: See Section 01 6000 - Product Requirements.

2.6 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.

B. Concrete Properties:
   1. Compressive strength, when tested in accordance with ASTM C39/C39M at 28 days; 4,000 psi.
   2. Air Content: 6.0 percent for 3/4-inch (19-mm) maximum aggregate.
      a. Exposed concrete shall be provided with air entraining of mixture.
   3. Maximum Slump: 4 inches.
   4. Maximum Aggregate Size: 3/4 inch.

2.7 MIXING

A. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

C. Site verification of conditions:
   1. Verify that site conditions are acceptable for placement of waterproofed concrete.
   2. Do not proceed with concrete placement until conditions unacceptable to the Hydrophobic Concrete Admixture Manufacturer are corrected.

D. Suitable Condition of Reinforcing Steel:
   1. At the time concrete is placed, reinforcement shall be free from mud, oil, or other nonmetallic coatings that decrease bond. Epoxy-coating of steel reinforcement in accordance with standards shall be permitted.
   2. Except for prestressing steel, steel reinforcement with rust, mill scale, or a combination of both shall be considered satisfactory, provided the minimum dimensions (including height of deformations) and weight of a hand-wire-brushed test specimen comply with ASTM A 615, ASTM A 706, ASTM A 996.

3.2 SUBBASE

A. See Section 31 2316 - Excavation for construction of base course for work of this Section.

3.3 PREPARATION

A. Moisten base to minimize absorption of water from fresh concrete.

B. Notify YPS Office of Facilities Management minimum 24 hours prior to commencement of concreting operations.

3.4 FORMING

A. Place and secure forms to correct location, dimension, profile, and gradient.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

D. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement. Provide edge forms for all area where brick pavers or installed in concrete pavements.

3.5 REINFORCEMENT

A. Place reinforcement as indicated.

B. Interrupt reinforcement at contraction joints.

C. Place dowels to achieve pavement and curb alignment as detailed.

3.6 COLD AND HOT WEATHER CONCRETING

A. Follow recommendations of ACI 305R when concreting during hot weather.

B. Follow recommendations of ACI 306R when concreting during cold weather.

C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

D. Provide a minimum 6/6 x 6/6 welded wire fabric in all pavements unless shown otherwise.

3.7 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

B. Ensure reinforcement, inserts, embedded parts, formed joints and ____ are not disturbed during concrete placement.

C. Place concrete continuously over the full width of the panel and between predetermined construction joints.

D. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

E. Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures to consolidate concrete according to recommendations in ACI 309R.

3.8 JOINTS

A. Align curb, gutter, and sidewalk joints.

B. Place 3/8 inch wide expansion joints at 20 foot intervals and to separate paving from vertical surfaces and other components and in pattern indicated.

1. Form joints with joint filler extending from bottom of pavement to within 1/2 inch of finished surface.
2. Secure to resist movement by wet concrete.

C. Use epoxy bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

D. Provide scored joints.
   1. At 5 feet intervals unless otherwise indicated..

3.9 POURED-IN-PLACE CONCRETE CURBS

A. Concrete curbs shall be as shown on drawings. Where curbs abut walkways the curbs shall be integral with the sidewalk.

B. Reinforcing: Minimum two #5 rods top and bottom of all curbs.

C. Concrete shall be compacted with an approved immersion type mechanical vibrator. Forms shall be left in place 24 hours or until the concrete has sufficiently hardened so that they can be removed without injury to the curb. Upon removal of the forms, the exposed faces of the curb shall be immediately rubbed to a uniform surface. Rubbing shall be accomplished by competent finishers. No plastering will be permitted.

D. Protect concrete surface from loss of surface moisture for at least 6 days by covering with kraft paper. Lap paper, mats 4 inches at edges and ends; seal kraft paper. Burlap is not permitted.

E. All expansion joints for concrete curbs shall be 1/2 inch premolded nonextruding filler as specified in Part 2 herein. Expansion material shall be one (1) piece to conform to the cross section of the curb.

F. Curbs shall be cast with expansion joints. Expansion joints shall line up with joints in walk, maximum 15 feet O.C.

G. The contractor shall keep the concrete curbs clean, aligned and protected from damage until final acceptance of the work. Blow out control joints prior to acceptance. Any curb damaged prior to the final acceptance of the work shall be repaired or replaced at the contractor's expense.

3.10 FINISHING

A. Area Paving: Light broom, texture perpendicular to pavement direction.

B. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4 inch radius.

3.11 TOLERANCES

A. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.

B. Maximum Variation From True Position: 1/4 inch.

3.12 FIELD QUALITY CONTROL

A. An independent testing agency, retained by the Owner, may perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
   1. Provide free access to concrete operations at project site and cooperate with appointed firm.
   2. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.

B. Compressive Strength Tests: ASTM C39/C39M; for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.
   1. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
   2. Perform one slump test for each set of test cylinders taken.

C. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.13 PROTECTION

A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

B. Protect installed work from damage due to subsequent construction activity on the site.
   1. Apply evaporation reducer (ACI 308) on flatwork immediately after finishing, as needed to maintain a film of water on the surface of the finished concrete until the final curing is applied, anytime the evaporation rate exceeds 0.10 lbs/ft2/hr.

C. Do not permit pedestrian traffic over pavement for 7 days minimum after finishing.

END OF SECTION

SECTION 33 4111
SITE STORM DRAINAGE PIPING AND STRUCTURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Storm drainage piping, fittings, and accessories.

B. Connection of drainage system to existing systems..

C. Catch basins.

1.3 RELATED REQUIREMENTS

A. Section 31 2316 - Excavation: Excavating of trenches, fill and backfill.

1.4 DEFINITIONS

A. Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.5 REFERENCE STANDARDS

A. AASHTO M 252 - Standard Specification for Corrugated Polyethylene Drainage Pipe; 2018.

B. AASHTO M 294 - Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-MM (12- to 60-in.) Diameter; 2018.

C. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2014.

D. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2011.

E. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Material; 2014.

1.6 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating pipe, pipe accessories, and drainage structures..

C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

D. Project Record Documents:

1. Record location of pipe runs, connections, catch basins, cleanouts, and invert elevations.

PART 2 PRODUCTS

2.1 PIPE MATERIALS

A. Provide products that comply with applicable code(s).

B. Plastic Pipe: ASTM D3350, High Density Polyethylene (HDPE) corrugated wall pipe with integrally formed smooth liner; inside nominal diameter of _____ inch, meeting the requirements of AASHTO M 252, Type S, for diameters between 3 inches and 10 inches and AASHTO M 294, Type S, for diameters between 12 inches and 60 inches, soil-tight, bell and spigot joints with rubber gaskets, with pipe and fittings manufactured from virgin PE compounds with cell classification 3254420C.

2.2 PIPE ACCESSORIES

A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

2.3 CATCH BASIN, TRENCH DRAIN AND COMPONENTS

A. Basis of Design: Oldcastle Precast Model CB-1818, oldcastleprecast.com; 817-453-1054.

B. Lids and Drain Covers: Cast iron, hinged to cast iron frame.

1. Catch Basin:

a. Concrete: 5,000 psi @ 28 days.
b. Steel Reinforcment: ASTM-A615 Grade 60 or ASTM A-497 Welded wire fabric.
c. Depth: AS shown on drawings.
d. Lid Design: Cast Iron Checkerboard grill.
e.

2.4 BEDDING AND COVER MATERIALS

A. Bedding: As specified in 31 2316 - Excavation .

B. Cover: As specified in 31 2316 - Excavation .

PART 3 EXECUTION

3.1 TRENCHING

A. Hand trim excavation for accurate placement of pipe to elevations indicated.

B. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.2 INSTALLATION - PIPE

A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.

B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.
1. Plastic Pipe: Also comply with ASTM D2321.

C. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch in 10 feet.

D. Connect to building storm drainage system, foundation drainage system, and utility/municipal sewer system.

3.3 INSTALLATION - CATCH BASINS, TRENCH DRAINS AND CLEANOUTS

A. Form bottom of excavation clean and smooth to correct elevation.

B. Form and place cast-in-place concrete base pad, with provision for sanitary sewer pipe end sections.

C. Level top surface of base pad; sleeve concrete shaft sections to receive storm sewer pipe sections.

D. Establish elevations and pipe inverts for inlets and outlets as indicated.

E. Mount lid and frame level in grout, secured to top cone section to elevation indicated.

F. Prefabricated trench drains:
1. Excavate; prepare substrate and supports according to the manufacturer's printed installation instructions.
2. Install prefabricated trench drain system according to the manufacturer's printed installation instructions.
3. Expansion, Construction, and Control Joints: Do not locate trench drain system on an expansion, construction or control joint in concrete or pavement. Where concrete or pavement joints running transverse to direction of flow cross the trench drain system, locate concrete or pavement joints and trench drain system joints so that both coincide.
4. Concrete Trench Support: 5,000 pst compressive strength, minimum.
a. Provide support on all sides of trench in minimum 8" thickness or greater as recommended by trench drain system manufacturer.
b. Screed and finish top edge of concrete flush with 1/8" above top surface of trench drain channel edge.
c. Do not use secondary edge finishing tools.

3.4 FIELD QUALITY CONTROL

A. Perform field inspection in accordance with Section 01 4000 - Quality Requirements.

B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Yonkers Public Schools.

3.5 PROTECTION

A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

END OF SECTION